ESR 316/420/524 Storage Chassis Installation Instruction

Revision History

Rev	Date	Modifications	Update By
1.0	04/27/2005	First Draft	Sio Fu

Preliminary

User Manual ESR 316, ESR 420, ESR 524

Safety Instruction

Use the following safety guidelines to ensure your own personal safety and to help protect your server, storage system, or appliance from potential damage.

Throughout this guide, blocks of text may be accompanied by an icon and printed in bold type. These blocks are notes, cautions, and warnings, and they are used as follows:

WARNING: A WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious bodily injury.

CAUTION: A CAUTION indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

NOTE: A NOTE indicates important information that helps you make better use of your system.

Read the installation instructions before connecting the system to the power source

This unit is intended for installation in restricted access areas. A restricted access area can be accessed only through the use of a special tool, lock and key, or other means of security.

Only trained and qualified personnel should be allowed to install, replace, or service this equipment

Do not work on the system or connect or disconnect cables during periods of lightning activity

This equipment must be grounded. Never defeat the ground conductor or operate the equipment in the absence of a suitably installed ground conductor. Contact the appropriate electrical inspection authority or an electrician if you are uncertain that suitable grounding is available.

Use only approved power cable(s). If you have not been provided with a power cable for your server, storage system, or appliance, or for any AC-powered option intended for your system, purchase a power cable that is approved for use in your country. The power cable must be rated for the product and for the voltage and current marked on the product's electrical ratings label. The voltage and current rating of the cable should be greater than the ratings marked on the product.

Do not spill food or liquids on your system components, and never operate the product in a wet environment.

Safety Instruction

If any of the following conditions occur, unplug the product from the electrical outlet and replace the part or contact your authorized service provider:

- The system cable, extension cable, or plug is damaged.
- An object has fallen into the product.
- The product has been exposed to water.
- The product has been dropped or damaged.

Do not push any objects into the openings of your system components. Doing so can cause fire or electric shock by shorting out interior components.

Keep your system components away from radiators and heat sources. Also, do not block cooling vents.

Do not overload the AC supply branch circuit that provides power to the rack. The total rack load should not exceed 80 percent of the branch circuit rating.

To prevent bodily injury when mounting or servicing this unit in a rack, you must take special precautions to ensure that the system remains stable. The following guidelines are provided to ensure your safety:

- When mounting this unit in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack
- If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack.
- This unit should be mounted at the bottom of the rack if it is the only unit in the rack.

Cleaning: Unplug your system from wall outlet before cleaning. Do not use liquid or aerosol cleaners. Use a damp (not wet) cloth for cleaning.

Use caution when pressing the component rail release latches and sliding a component into or out of a rack; the slide rails can pinch your fingers.

Allow the product to cool before removing covers or touching internal components.

Position system cables and power cables carefully; route system cables and the power cable and plug so that they cannot be stepped on or tripped over. Be sure that nothing rests on your system components' cables or power cable.

Safety Instruction

There is a danger of a new battery exploding if it is incorrectly installed. Replace the battery only with the same or equivalent type recommended by the manufacturer. Do not dispose of the battery along with household waste. Contact your local waste disposal agency for the address of the nearest battery deposit site.

Ground yourself by touching an unpainted metal surface on the chassis, such as the metal around the card-slot openings at the back of the computer, before touching anything inside your computer.
While you work, periodically touch an unpainted metal surface on the computer chassis to dissipate any static electricity that might harm internal components.

When unpacking a static-sensitive component from its shipping carton, do not remove the component from the antistatic packing material until you are ready to install the component in your computer. Just before unwrapping the antistatic packaging, be sure to discharge static electricity from your body.

When transporting a sensitive component, first place it in an antistatic container or packaging.

Handle components and cards with care. Do not touch the components or contacts on a card. Hold a card by its edges or by its metal mounting bracket. Hold a component such as a microprocessor chip by its edges, not by its pins.

To help avoid possible damage to the system board, wait 5 seconds after turning off the computer before disconnecting a device from the computer.

When you disconnect a cable, pull on its connector or on its strain-relief loop, not on the cable itself. Some cables have a connector with locking tabs; if you are disconnecting this type of cable, press in on the locking tabs before disconnecting the cable. As you pull connectors apart, keep them evenly aligned to avoid bending any connector pins. Also, before you connect a cable, ensure that both connectors are correctly oriented and aligned.

To help protect your system/components from sudden, transient increases and decreases in electrical power, use a surge suppressor, line conditioner, or uninterruptible power supply (UPS).

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Chapter 1. Product Overview

1.1 Chassis Description

Enlight Corp USA ESR Series Chassis are designed to support for high density Storage and Server Board. The chassises are shipped with container designed to provide protection and prevent damage during shipment. These chassis were carefully inspected before and during the packing procedure at the factory. Evidence of any damage to these chassises should be reported to the shipper immediately.

If the wrong ESR-Series model has been received, please call your reseller or Enlight Corp USA at 562-781-9898 to arrange for a Return Material Authorization (RMA). Enlight Corp USA cannot accept returns which do not display an RMA number on the outside of the package. Return the unit with all the original packing materials.

To complete the system, you must purchase some items seperately (see below)

Ground yourself by touching an unpainted metal surface on the chassis, such as the metal around the card-slot openings at the back of the computer, before touching anything inside your computer.
While you work, periodically touch an unpainted metal surface on the computer chassis to dissipate any static electricity that might harm internal components.

The following compinents are included with the ESR series chassises

i Rack mount chassis with slide rail
ii 16 Hard Drive Trays for ESR316; 20 Hard Drive Trays for ESR420; 24 Hard Drive Trays for ES
iii 4 x Serial ATA or Serial ATA multilane or SCSI or Serial Attached SCSI Backplane for ESR 316
5 x Serial ATA or Serial ATA multilane or SCSI or Serial Attached SCSI Backplane for ESR 420
6 x Serial ATA or Serial ATA multilane or SCSI or Serial Attached SCSI Backplane for ESR 524
iv 650W 2+1 Redundant Power Suppy with 3 modulars for ESR 316
930W 2+1 Redundant Power Supply with 3 modulars for ESR 420 and ESR 524 or
1250W 3+1 Redundant Power Supply with 4 modulars for ESR 524
v Two Hot Swap 12cm fans.
vi Serial DB 9 cable
vii Dual port USB cable
viii Accessories Box

The following compinents must be purchased seperately

i One Server Board
ii Minimum of one processor that is supported by the server board installed
iii Minimum of one memory modular that is supported by the server board installed
iv 3.5” Hard Disk Drive (Serial ATA, SCSI or Serial Attached SCSI)
v 2.5” SFF Hard Disk Drive (ATA)
vi Slim Floppy Disk Drive
vii Slim CD/DVD Rom Drive
viii PCI add-in-cards
ix Other Peripheral devices

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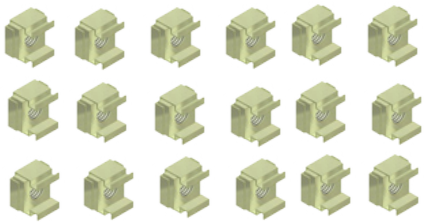
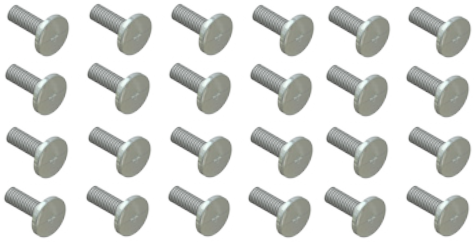
The following compinents are included in the accessories box

Bracket extender for 30-inch rack
06-0138-01A left
06-0138-02A right



M5 Cage Nuts, 16 pcs
(order #09-1053-01A)

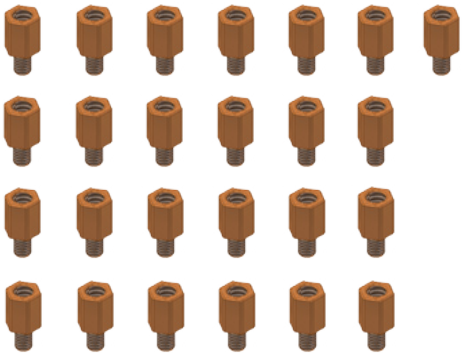
M5 x 1” Enclosure Key Pan Head
Screws, 4pcs (order#09-1019-01A)



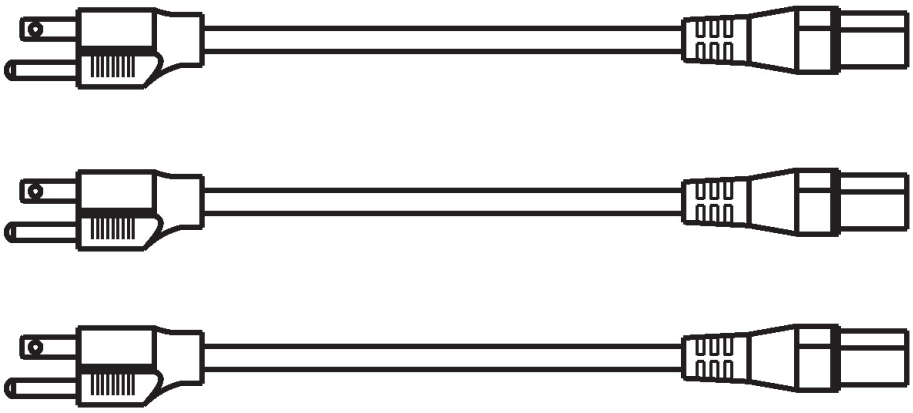
M5 x 3/4” Pan Head Screws,
24 pcs (order#09-1052-01A)

#6-32 RH screws 30 pcs
(order #09-1003-01A)

Cable Tie x 4



#6-32 bolt standoffs 25 pcs
(order #09-1007-01A)



AC Cord North America 3pcs
(order # 17-1012-01A)

Depend on your country, the accessories box may not have the AC cord and you have to order the AC cord seperately.

Use only approved power cable(s). If you have not been provided with a power cable for your server, storage system, or appliance, or for any AC-powered option intended for your system, purchase a power cable that is approved for use in your country. The power cable must be rated for the product and for the voltage and current marked on the product’s electrical ratings label. The voltage and current rating of the cable should be greater than the ratings marked on the product.

1.2 Chassis Front View

ESR 316

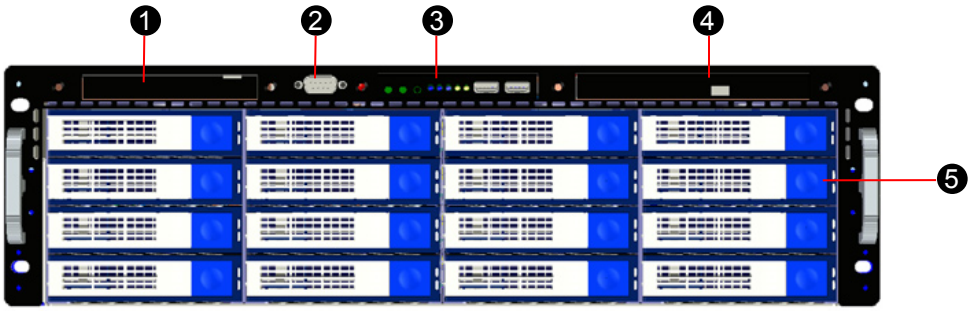


Figure 1 ESR 316 Front View

ESR 420

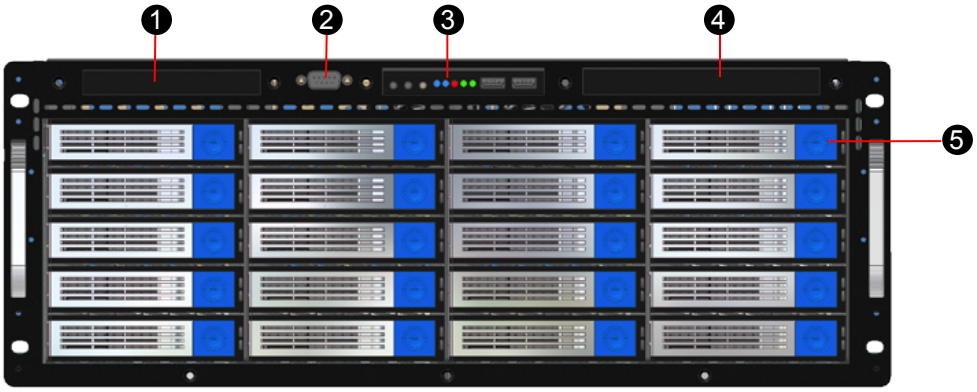


Figure 2 ESR 420 Front View

ESR 524

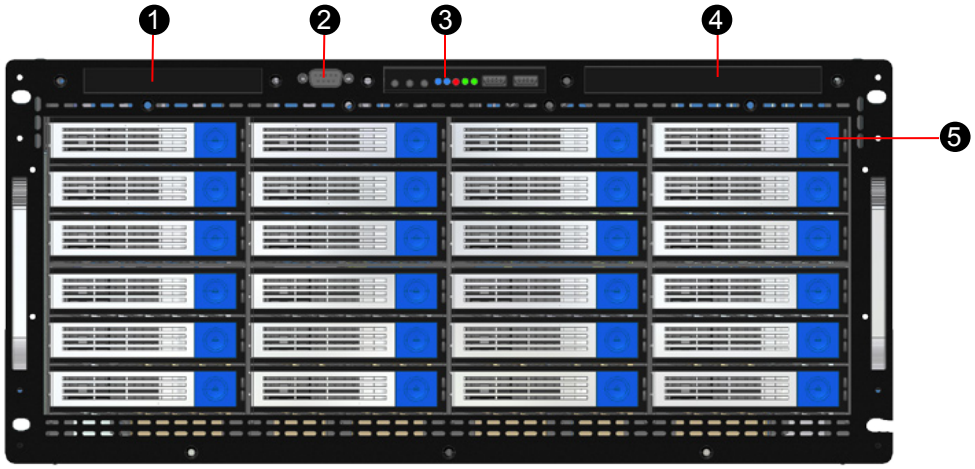


Figure 3 ESR 524 Front View

1. Slim FDD Bay
2. Serial DB 9 connector
3. Front Panel Indicator
4. Slim CD/DVD Bay
5. HDD Trays

1.3 Chassis Front Panel Features

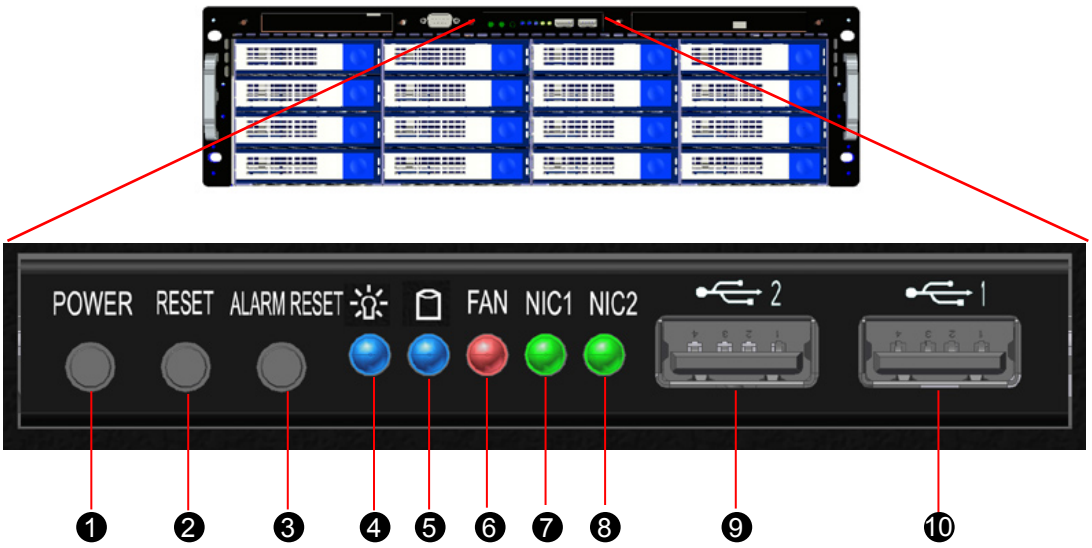


Figure 4 Front Panel Indicator

Front Panel Button and LED functions

1	Power ON/OFF switch	Toggles the system ON/OFF
2	Reset switch	Reboots and initalizes the system
3	Alarm Reset switch	Reset the system alarm for Fan failed, Over-Temperature and Power Supply failed
4	System ON LED	Continuous blue light indicates the system is ON No light indicates the system is OFF
5	Hard Disk Activity LED	Blinking blue light indicates the hard disk drive that is directly connected to the motherboard has activity
6	FAN Failed LED	Blinking red light indicates either the Fan(s) and/or Power Supply Modular(s) and/or System Over Temperature. A short beep form the system alarm indicates System Fan failure, A long beep indicates chassis inside temperature exceed the preset value and a continuous beep indicates Power Supply failure
7	NIC 1 LED	Continuous green light indicates the system is connected to the network Blinking green light indicates activity the system and the network to which it is connected
8	NIC 2LED	
9	USB connector 2	USB connector that is used to connect external USB device. Refer Table
10	USB connector 1	

NOTE: Refer section 2.2.5.1 for Front Panel I/O cable pin assignment

Section 1.3.1Front Panel USB Connectors Pin Assignment

Pin	Signal Name
1	Gound
2	USB Positive Signal
3	USB Negative Signal
4	USB Port Power

Table 1 Front Panel USB Connector Pin Assignment

NOTE: Refer section 2.11 for DB9 cable pin assignment

Section 1.3.2 Front Panel Serial DB 9 Connector Pin Assignment

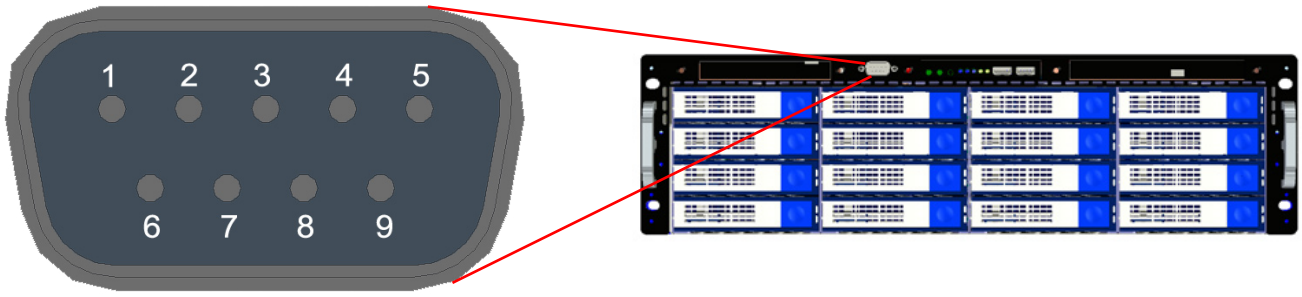


Figure 5 Serial DB 9 connector

The DB-9 (9-pin) serial port allows administrators access the system and.or controll external device through a serial console session using UNIX commands such as hyper terminal. The pin assignment is tablied below. The DB serial connector can be changed to VGA Analog 15 pin connector if your system support. Contact your reseller for order information.

Pin	Signal Name
1	DCD (Data Carrier Detect)
2	RXD (Receive Data)
3	TXD (Transmit Data)
4	DTR (Data Terminal Ready)
5	GND (Ground)
6	DSR (Data Set Ready)
7	RTS (Request to Send)
8	CTS (Clear to Send)
9	RI (Ring Indicator)

Table 2 Front Panel DB 9 Connector Pin Assignment

NOTE: Refer section 2.11 for DB9 cable pin assignment

1.4 Chassis Back View

ESR 316

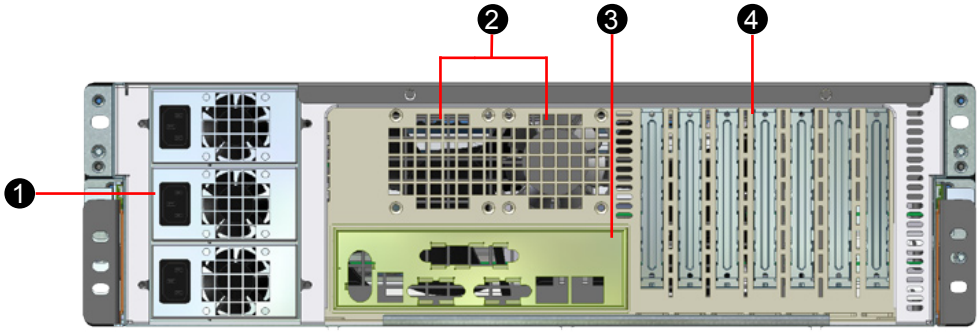


Figure 6 ESR 316 Rear View

ESR 420

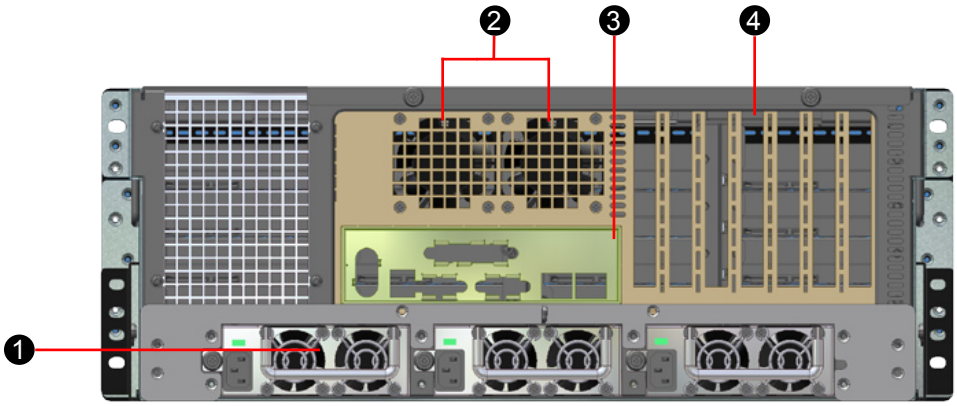


Figure 7 ESR 420 Rear View

ESR 524

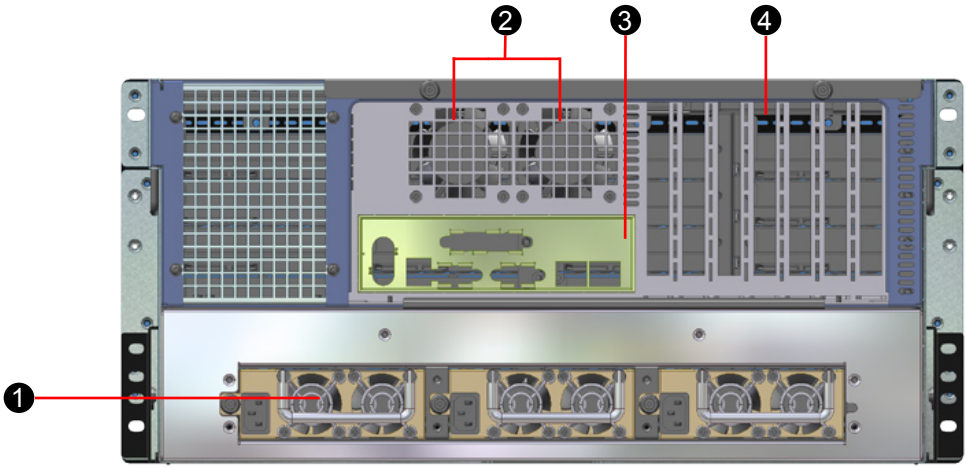


Figure 8 ESR 524 Rear View

1. Power Supply Modular
2. Optional Rear Fan (2X)
3. Rear I/O Shield
4. PCI Slot Cutout (7X)

1.5 Chassis Dimensions

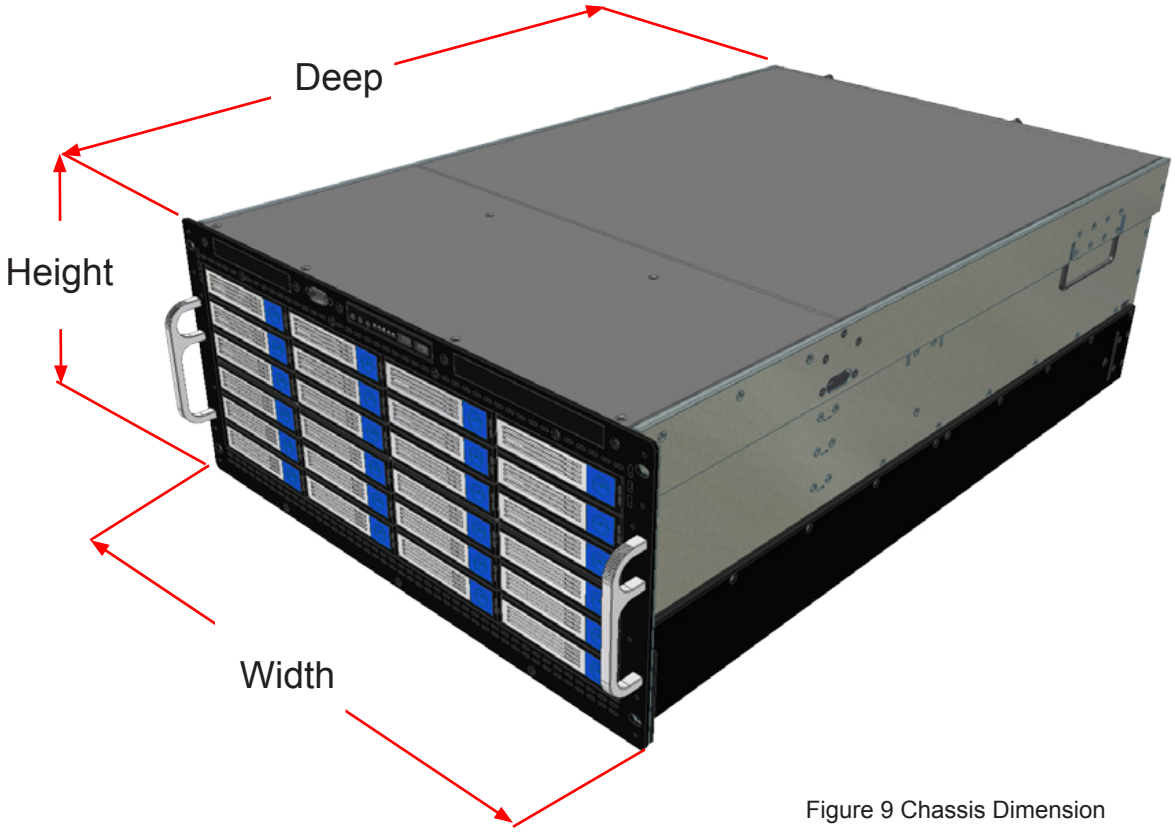


Figure 9 Chassis Dimension

	ESR-316	ESR-420	ESR-524
Height	5.20” (3U)	6.95” (4U)	8.70” (5U)
Width	19.0”	19.0”	19.0”
Deep	28.0”	28.0”	28.0”

Table 3 Chassis Dimensions

1.5 System Components

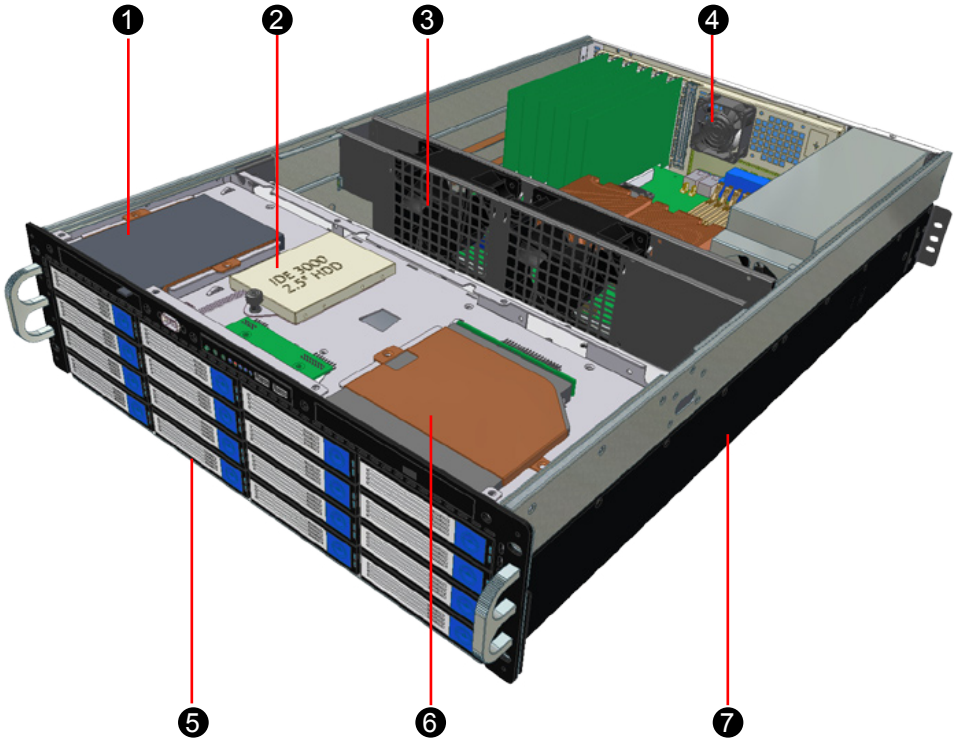


Figure 10 Front Opened View

1. Slim Floppy Disk Drive
2. 2.5” Hard Disk Drive
3. Hot Swap Fan Modular
4. Optional Rear Fan
5. Hard Disk Drive Tray
6. Slim CD/DVD-Rom
7. Rack Mount Slide Rail

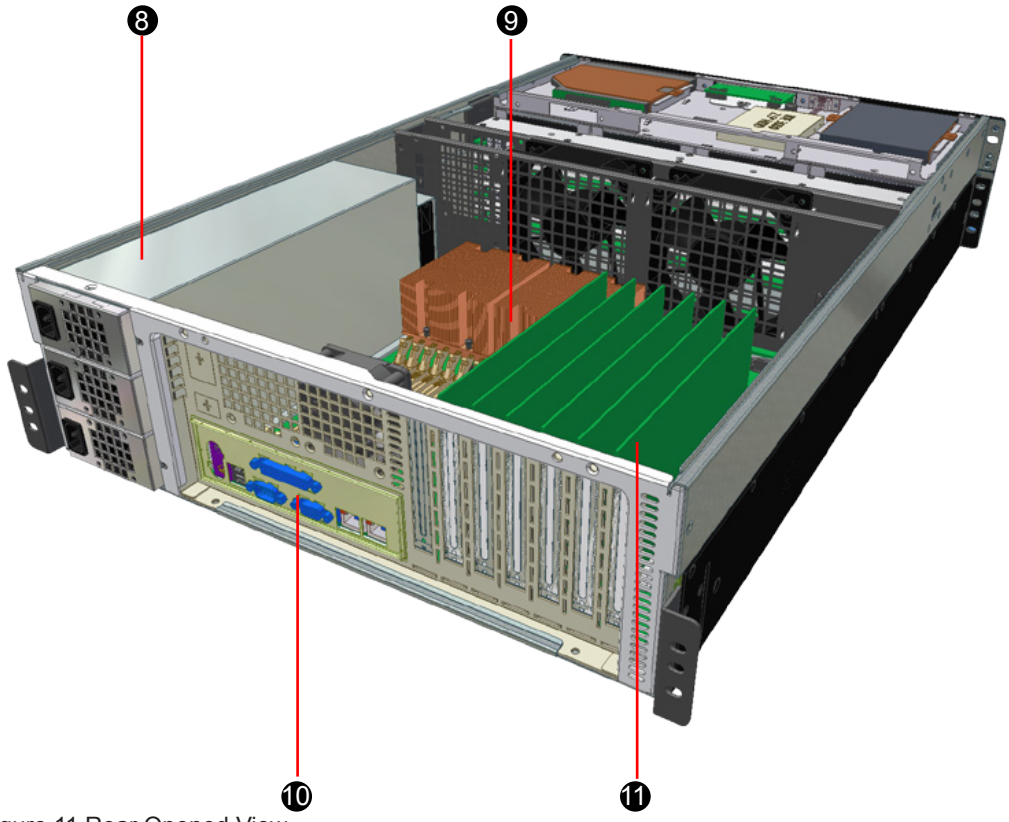


Figure 11 Rear Opened View

8. Power Supply Modular
9. Server Board
10. Rear I/O Shield
11. Add-in-cards

Chapter 2. System Board and CableFeatures

2.1 Front Panel Board (order #16-0102-01A)

The Front Panel Board supports several push buttons and status LEDs, along with USB ports to centralize system control, monitoring, and accessibility to within a common compact design. Refer Section 1..3 for buttons and LEDs function. The following diagram overviews the board layout and pin assignments for connectivity.

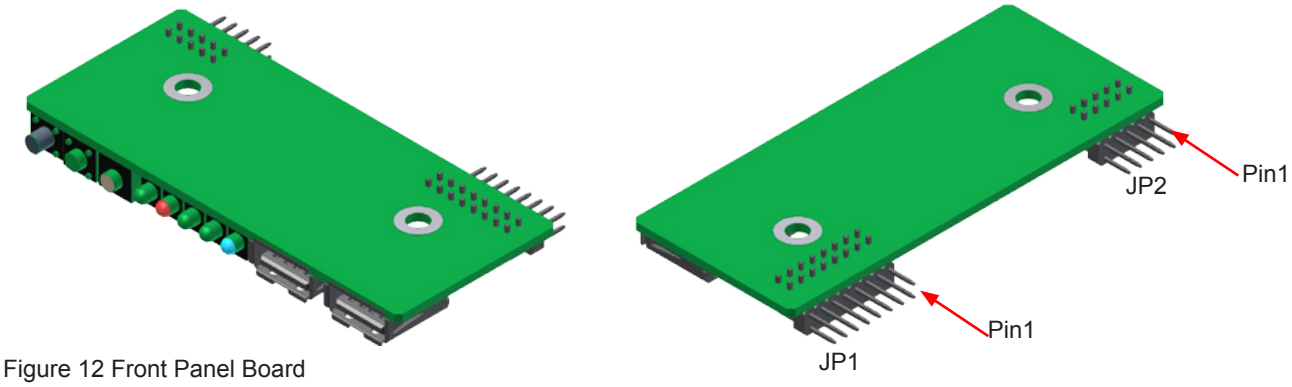


Figure 12 Front Panel Board

2.1.1 JP1 16-pin Front Panel Connector Header

The Front Panel connector header communicate between the System Power Board to provide signal command to the Front Panel Board through Front Panel Cable (order # 17-1002-01A) The pin assignment of the Front Panel Header (JP1) is presented in the table below.

Pin	Signal Name
1	Power Switch 1
2	Power Switch 2
3	System Reset Switch 1
4	System Reset Switch 2
5	Alarm Reset
6	Fail LED Negative (-)
7	Access LED Positive (+)
8	Access LED Negative (-)
9	LAN1 LED Negative (-)
10	LAN 1 LED Positive (+)
11	LAN 2 LED Negative (-)
12	LAN 2 LED Positive (+)
13	Ground
14	Ground
15	+5V
16	+5V

Table 4 16-pin Front Panel Header Pin assignment

2.1.1.1 16 pin Front Panel cable (order # 17-1002-01A)

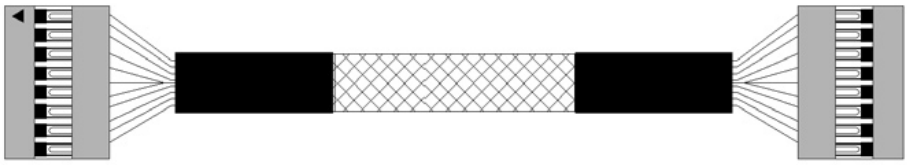


Figure 13 16-pin Front Panel cable

2.1.2 JP2 10-pin Front Panel USB Header

The Front Panel connector header communicate between the System Power Board to provide signal command to the Front Panel Board through Front Panel Cable (order # 17-1002-01A) The pin assignment of the Front Panel Header (JP1) is presented in the table below.

Name	Pin	Pin	Name
USB Port 2 Power	1	2	USB Port 1 Power
Port 2 Negative Signal	3	4	Port 1 Negative Signal
Port 2 Positive Signal	5	6	Port 1 Negative Signal
Gound	7	8	Gound
Key N/C	9	10	Overcurrent Signal N/C

Table 5 Front Panel USB cable Pin assignment

2.1.2.1 10 pin Front Panel USB cable (order # 17-1006-01A)

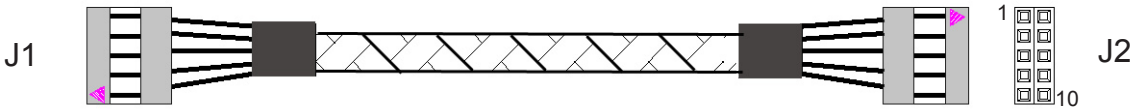


Figure 14 10-pin USB cable

Name	Pin	Pin	Name
USB Port 2 Power	1	2	USB Port 1 Power
Port 2 Negative Signal	3	4	Port 1 Negative Signal
Port 2 Positive Signal	5	6	Port 1 Negative Signal
Gound	7	8	Gound
Empty	9	10	Empty

Table 6 Front panel USB cable pin assignment

NOTE: There is no KEY on pin 9 of the USB cable because some server board USB headers were KEY on pin 10.

2.2 System Power Board (order # 16-0101-01A)

The power system of the ESR-series chassis consists of an intergrated power share board which consolidate all power cable to support backplane and hot-swappable system fans. The System Power Board embedded with system management senors such as fan failed signal, power failed signal and over temperature signal. Failed signal react with beeper warning and LED blinking on the front panel board. Failed signal can feedback to Server board IPMI server management through I2C connection. All data cable is consolidated on the one side of the chasis while or power cable are located on the other side to avoid interference to the data performance.

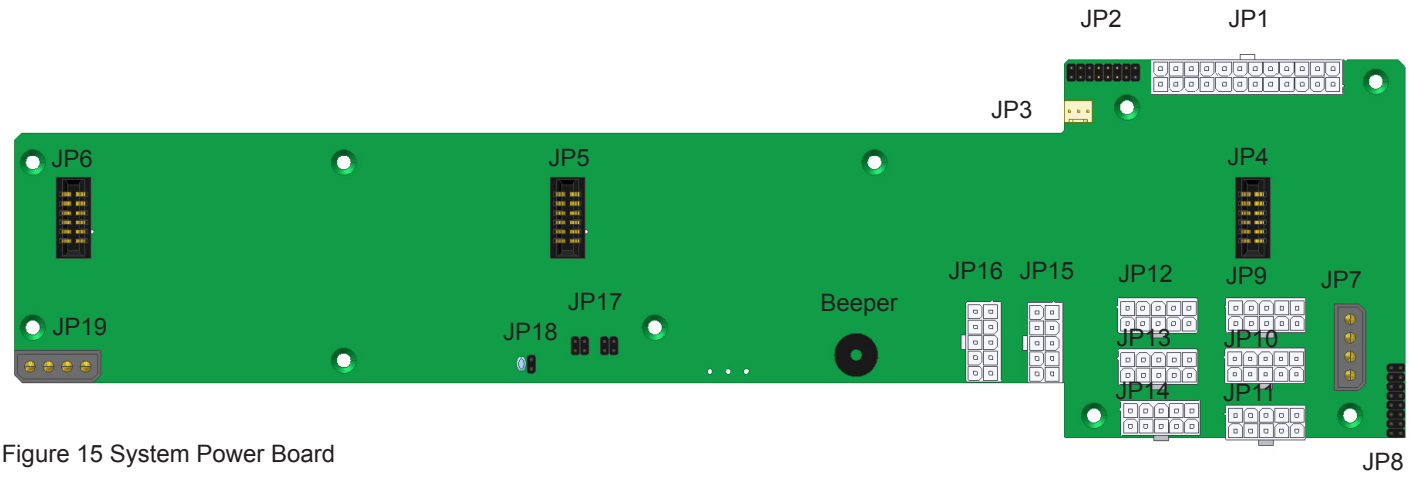


Figure 15 System Power Board

2.2.1 JP1 24-pin Power Supply to System Board Header

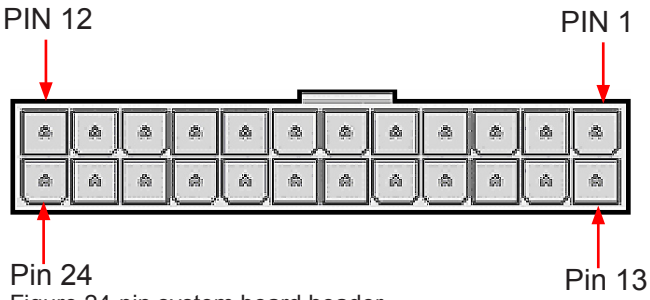


Figure 24-pin system board header

Name	Pin	Pin	Name
+5V	1	2	+5V
+5V	3	4	+5V
GND	5	6	GND
+12V	7	8	+12V
+12V	9	10	GND
SDA	11	12	Reset
+5V	13	14	+5V
+5V	15	16	+5V
GND	17	18	GND
GND	19	20	+12V
+12V	21	22	GND
SCL	23	24	TTL

Table 7 24-pin Peripheral Power (JP7 and JP19) Pin assignment

2.2.2 JP2 16-pin Front Panel to Server Board and System Fan Feedback Header

The Front Panel connector header communicate between the System Power Board and the server board to provide signal command through Front Panel I/O Cable (order # 17-1014-01A)

The system fan feedback header supports for several management features that can be ulilized by the server board management system if available throough the PWN fan signal cable (order #17- 1015-01A)

Figure 17 16-pin front panel connector

Name	Pin	Pin	Name
Fan 1 PWN-OUT	1	2	Fan 1 TACH-OUT
Fan 2 PWN-OUT	3	4	Fan 2 TACH-OUT
Power SW 1	5	6	Power SW 2
Reset SW 1	7	8	Reset SW 2
HDD LED +	9	10	HDD LED -
LAN 1 LED +	11	12	LAN 1 LED -
LAN 2 LED +	13	14	LAN 2 LED -
SDA	15	16	SCL

Table 8 16-pin front panel I/O pin assignment (system board)

2.2.2.1 Front Panel I/O Cable (order # 17-1014-01A)

J2 to J7 connect to the server board front panel head with PIN 1 of J1 to PIN 5 of JP2 on the 16 pin of section 2.2.2 Refer to your server board manual to connection instruction

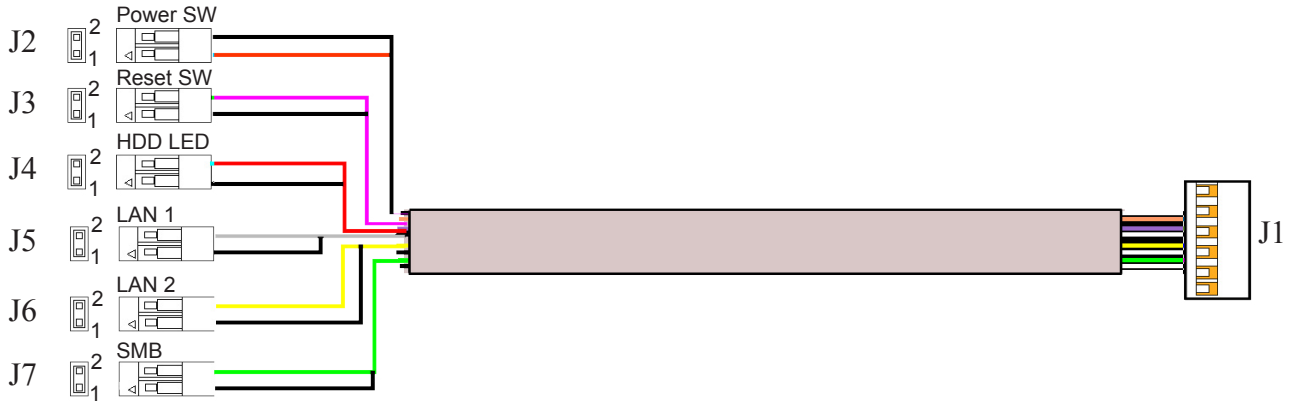


Figure 18 Front Panel I/O cable (order # 17-1014-01A)

Pin	Color	Signal Name
J2-1	Black	Power Switch 1
J2-2	Orange	Power Switch 2
J3-1	Black	Reset Switch 1
J3-2	Violet	Reset Switch 2
J4-1	Black	HDD LED Positive (+)
J4-2	Red	HDD LED Negative (-)
J5-1	Black	LAN 1 LED Positive (+)
J5-2	Gray	LAN 1 LED Negative (-)
J6-1	Black	LAN 2 LED Positive (+)
J6-2	Yellow	LAN 1 LED Negative (-)
J7-1	Black	SDA
J7-2	Green	SCL

Table 9 Front Panel I/O cable Pin assignment

2.2.2.2 PWN Fan signal cable (order # 17-1015-01A)

J2 to J3 connect to the server board 4 pin PWM fan header or 3 pin regular fan header. PIN 1 of J1 connect to PIN 1 of the JP2 16-pin Front Panel to Server Board and System Fan Feedback Header on section 2.2.2

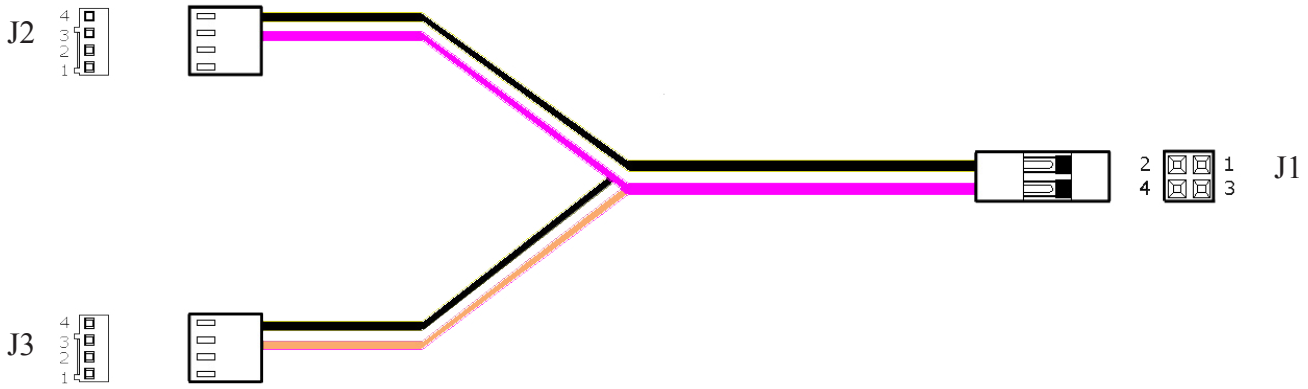


Figure 10 PWM fan signal cable

Pin	Signal Name
1	Not Use
2	Not Use
3	Fan Tach out Signal
4	Fan PWM out Signal

Table 10 PWN Fan signal cable Pin assignment

2.2.3 JP3 3-pin Fan Header

The System Power board provide an additional SSI compliant 3-pin fan connector.

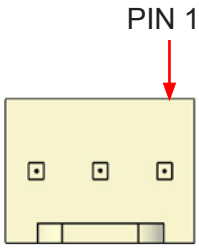


Figure 20 3-pin fan header

Pin	Name
1	Fan Tach
2	12V
3	Ground

Table 11 3-pin fan header pin assignment

2.2.4 JP4 -JP6 12-pin Hot-Swap Fan Header

JP4-JP6 connect to the hot-swap system fans

2.2.5 JP7 and JP19 4-pin Power Header

JP7 4-pin Power Header is connected to the Slim Power Board (Section 2.8)
JP19 4-pin Power Header is used to connected to high power add-in-card (such as graphic card require additional power

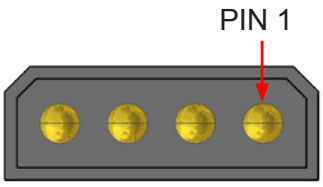


Figure 21 4-pin power header

Pin	Signal Name
1	+ 12V
2	Ground (COM)
3	Ground (COM)
4	+ 5V

Table 12 4-oin power header pin assignment

2.2.5.1 4pin power cable (order #17-1007-XXX)

The 4-pin power cable (order #17-1007-01A) is connected from the system power bioard to the slim power board (section 2.8) Power cable (order #17-1007-02A) is connected from the system power board to the high power add-in-card. Refer the table below for cable length and order imformation.

Figure 22 4-pin power cable

Cable Order #	cable length	Instruction
17-1007-00A	8 inches	Connect to slim power board (section 2.8)
17-1007-01A	20 inches	Connect to high power add-in-card

Table 13 4-pin power cable list

2.2.6 &JP8 16-pin Front Panel Board connector header

The Front Panel connector header communicate between the System Power Board to provide signal command to the Front Panel Board through Front Panel Cable, refer to section 2.1 ,(order # 17-1002-01A) The pin assignment of the Front Panel Header (JP1) is presented in the table below.

Figure 23 16-pin system board to front panel I/O header

Pin	Signal Name
1	Power Switch 1
2	Power Switch 2
3	System Reset Switch 1
4	System Reset Switch 2
5	Alarm Reset
6	Fail LED Negative (-)
7	Access LED Positive (+)
8	Access LED Negative (-)
9	LAN1 LED Negative (-)
10	LAN 1 LED Positive (+)
11	LAN 2 LED Negative (-)
12	LAN 2 LED Positive (+)
13	Ground
14	Ground
15	+5V
16	+5V

Table 14 16-pin Front Panel Header pin assignment (system power board)

2.2.7 JP9-JP16 10-pin power out headers

The 10-pin power out headers are connected to the backplane board to provide power to hard disk drives. The pin assignment of the 10-pin power header is presented in the table below.

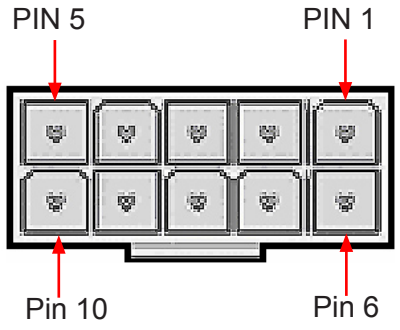


Figure 24 10-pin system power board to backplane header

Name	Pin	Pin	Name
+ 5V	1	2	Fan 1 TACH-OUT
Fan 2 PWN-OUT	3	4	Fan 2 TACH-OUT
Power SW 1	5	6	Power SW 2
Reset SW 1	7	8	Reset SW 2
HDD LED +	9	10	HDD LED -

Table 15 10-pin power connector header pin assignment

2.2.7.1 10-pin power cable (order#17-1010-XXX)

Connect JP9-JP16 to backplane board 10-pin header to provide DC power to the backplane board. The following table defines the cable length and order number

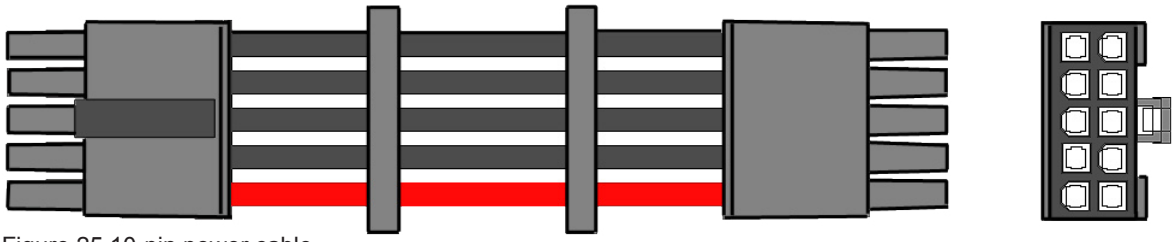


Figure 25 10-pin power cable

Cable Order #	cable length	Instruction
17-1010-01A	2.5 inches	ESR 316 to ESR 524 reqire 1
17-1010-02A	3.5 inches	ESR 316 require 1, ESR420 - ESR 524 require 2
17-1010-03A	4.75 inches	ESR-316 to ESR 420 require 1, ESR 524 requires 2
17-1010-04A	6 inches	ESR 316 t0 ESR 524 require 1

Table 16 10-pin power cable list

2.2.8 Beeper

The beeper provides warning signals and is itemalized in the following table

Beep	Reason	Reaction
Short	Fan failed	Replace the system fan (section 3.9)
Long	Over Temperature	check computer room ambient temperature
Continue	Power Supply failed	Replace power supply modular

Table 17 System power board warning signal list

Do not exceed the operation ambient temperature of the ESR-series chassis, which is 95degrees F (35 degrees C)

2.2.9 Two 4-pinThermocouple Threshold Jumper Headers

These jumpers define the thermocouple threshold setting, if the temperature feedback from the thermocouple exceed the threshold setting, the beeper will alarm and the fan failed LED on the front panel will turn on.

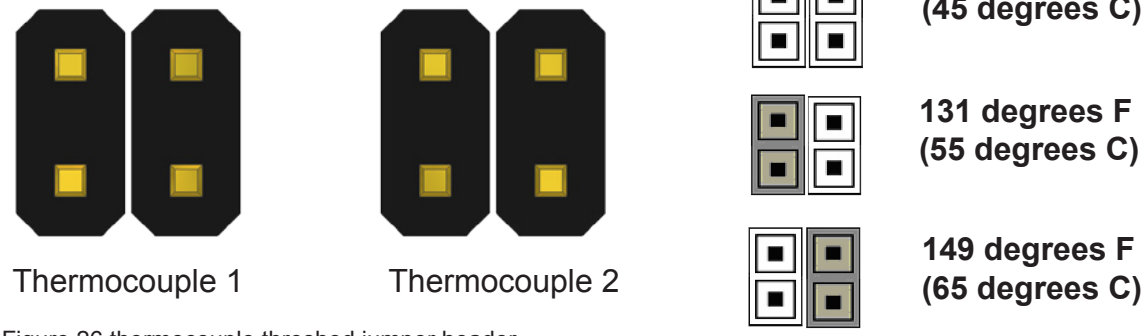


Figure 26 thermocouple threshod jumper header

2.2.10 Thermocouple Header

There is one Thermocouple embedded on the system power board (Thermocouple 1) to monitor the system temperature, The system allow one extra K-Type thermocouple to monitor the system hot point

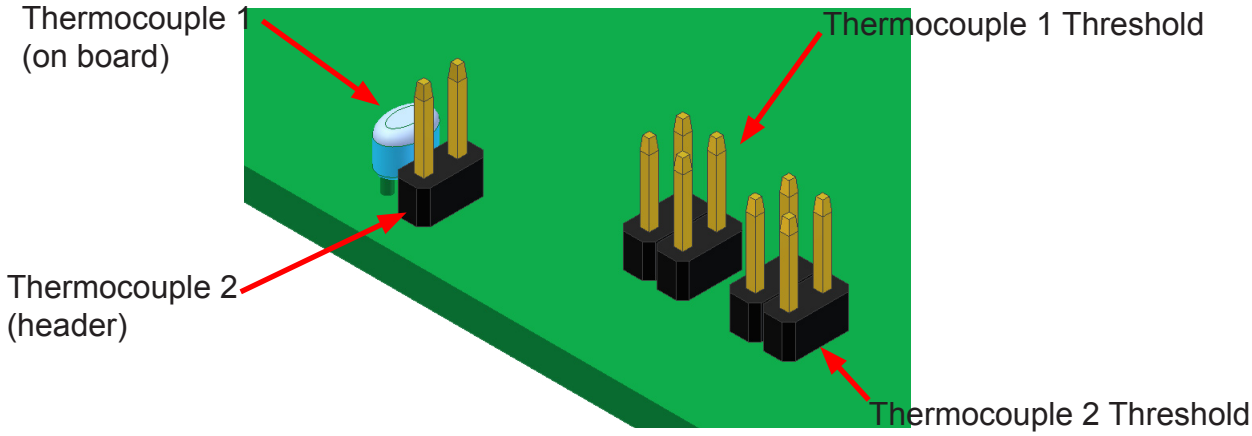


Figure 27 Thermocouple header

2.2.10.1 K-TypeThermocouple (order# 17-1020-01A)

Connect the 2 Pin cable thermocouple to the thermocouple 2 header. PIN 1 is labled with a triangle mark

Figure 28 2-pin thermocouple with cable

2.3 Serial ATAI Backplane Board (order # 16-0107-01A)

Serial ATA blackplane board supports four hot-swap Serial ATA hard disk drive. The following diagram overviews the board layout and pin assignments for connectivity.

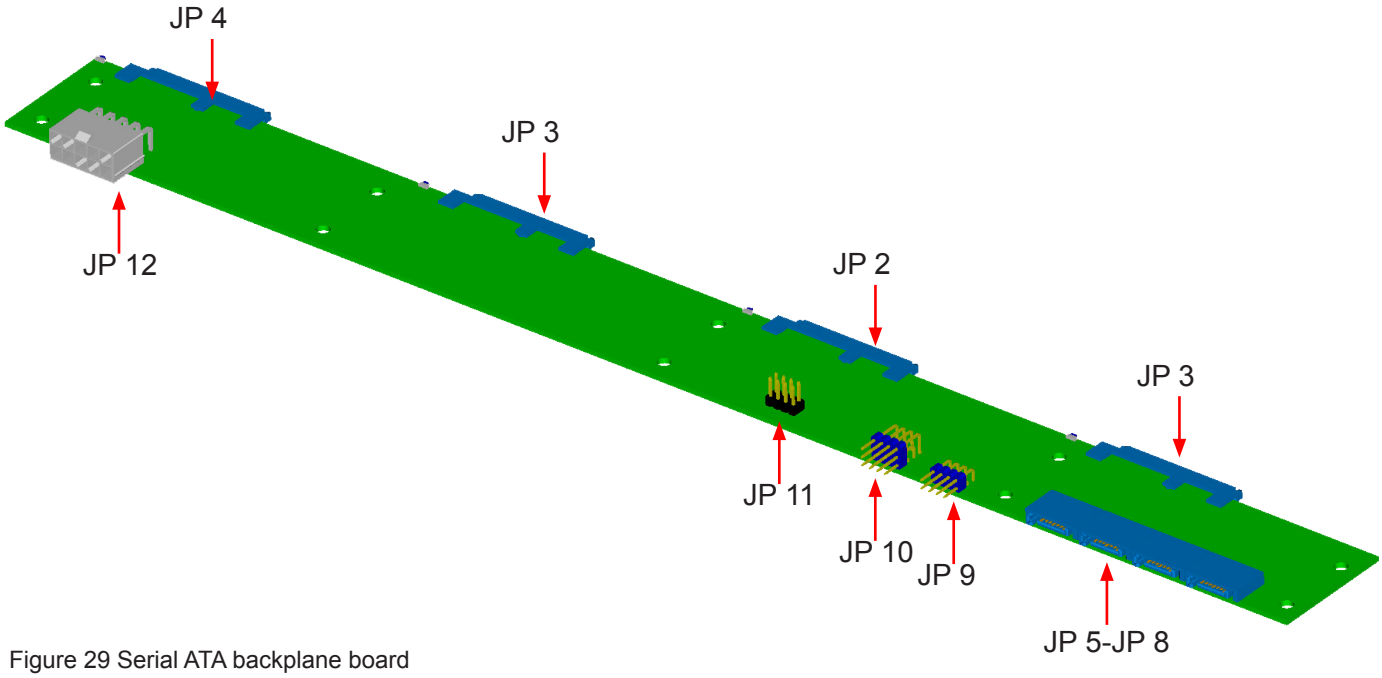


Figure 29 Serial ATA backplane board

2.3.1 JP1 to JP4 22-pin Serial ATA Connector Header

JP1 to JP4 connect the backplane to the Serial ATA hard disk drive, the pin assignment is shown on the table below

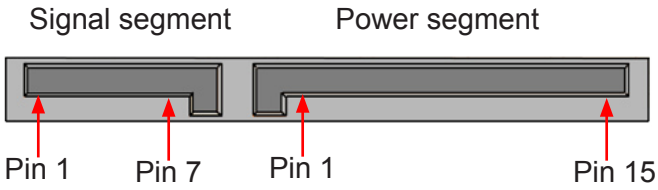


Figure 30 22 pin Serial ATA connector header

Pin	Signal Name
1	Ground
2	DRV RX Positive
3	DRV RX Negative
4	Ground
5	DRV TX Positive
6	DRV TX Negative
7	Ground

Table 18 22-pin SATA signal segment pin assignment

Pin	Signal Name
1	+ 3.3V
2	+ 3.3V
3	+ 3.3V
4	Ground
5	Ground
6	Ground
7	+ 5V
8	+ 5V
9	+ 5V
10	Ground
11	See Note Below
12	Ground
13	+12V
14	+12V
15	+12V

Table 19 22 pin SATA power segment pin assignment

NOTE: Pin 11 on the 22 pin connector power segment will receive drive activity signal directly from the hard disk drive. Refer section 2.3.4 for jumper setting to enable or disable Pin 11 function. The default setting is disable

NOTE: Hard drive that support Pin 11 activity signal inlcude all Western Digital model, Maxtor DiamondMAX 10 , MaXLine III and MaXLine III+

2.3.2 JP5 to JP8 7-pin Serial ATA Connector Header

JP5 to JP7 connect the backplane to the Serial ATA controller, the pin assignment is shown on the table below

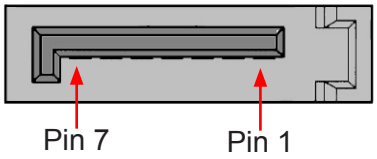


Figure 31 7-pin Serial ATA connector

Pin	Signal Name
1	Ground
2	DRV RX Positive
3	DRV RX Negative
4	Ground
5	DRV TX Positive
6	DRV TX Negative
7	Ground

Table 20 7 pin Serial ATA data header pin assignment

2.3.2.1 7-pin Serial ATA cable (17-1011-XXX)

The 7 pin Serial ATA cable is used to connect the Serial ATA backplane to the Serial ATA controller. The length of the cable is 19.5 inch. Each cable has a drive number marked on for easier cable management. Refer the cable part number for markings.

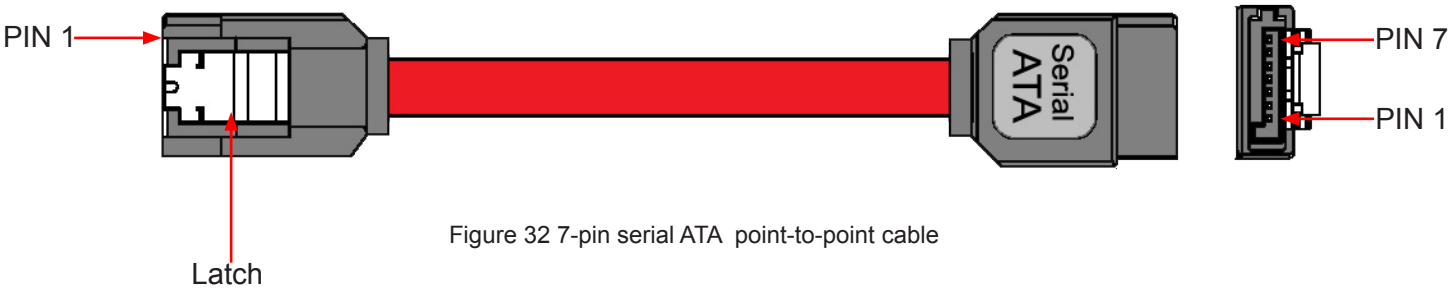


Figure 32 7-pin serial ATA point-to-point cable

Cable Order #	Markings	Instruction
17-1011-01A	HDD “0”	Connect to Drive 0 on the backplane
17-1011-02A	HDD “1”	Connect to Drive 1 on the backplane
17-1011-03A	HDD “2”	Connect to Drive 2 on the backplane
17-1011-04A	HDD “3”	Connect to Drive 3 on the backplane
17-1011-05A	HDD “4”	Connect to Drive 4 on the backplane
17-1011-06A	HDD “5”	Connect to Drive 5 on the backplane
17-1011-07A	HDD “6”	Connect to Drive 6 on the backplane
17-1011-08A	HDD “7”	Connect to Drive 7 on the backplane
17-1011-09A	HDD “8”	Connect to Drive 8 on the backplane
17-1011-10A	HDD “9”	Connect to Drive 9 on the backplane
17-1011-11A	HDD “10”	Connect to Drive 10 on the backplane
17-1011-12A	HDD “11”	Connect to Drive 11 on the backplane
17-1011-13A	HDD “12”	Connect to Drive 12 on the backplane
17-1011-14A	HDD “13”	Connect to Drive 13 on the backplane
17-1011-15A	HDD “14”	Connect to Drive 14 on the backplane
17-1011-16A	HDD “15”	Connect to Drive 15 on the backplane
17-1011-17A	HDD “16”	Connect to Drive 16 on the backplane
17-1011-18A	HDD “17”	Connect to Drive 17 on the backplane
17-1011-19A	HDD “18”	Connect to Drive 18 on the backplane
17-1011-20A	HDD “19”	Connect to Drive 19 on the backplane
17-1011-21A	HDD “20”	Connect to Drive 20 on the backplane
17-1011-22A	HDD “21”	Connect to Drive 21 on the backplane
17-1011-23A	HDD “22”	Connect to Drive 22 on the backplane
17-1011-24A	HDD “23”	Connect to Drive 23 on the backplane

Table 21 Serial AtA point-to-point cable list

2.3.3 JP9 8-pin Serial ATA Activity and Failed signal header

Connect the upper 4 pin to the Serial ATA controller activity signal header and connect the lower 4 pin to Serial ATA controller failed signal header.

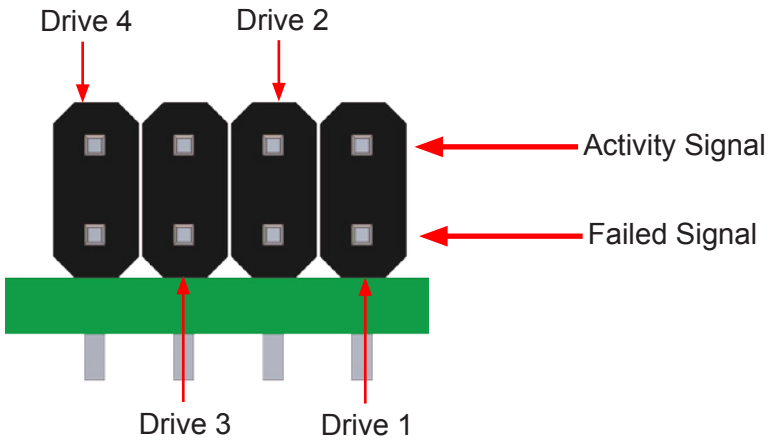


Figure 33 8-pin Serial ATA Hard drive status LED header

2.3.3.1 4-pin HDD status Cable (17-1013-XXX)

The 4 pin HDD status activity cable that is connected from the 8-pin Serial ATA Activity and Failed signal header to the Serial ATA controller status LED header. Refer to your SATA controller docunmentation, Each cable has a drive number marked on for easier cable management. Refer the cable part number for markings.

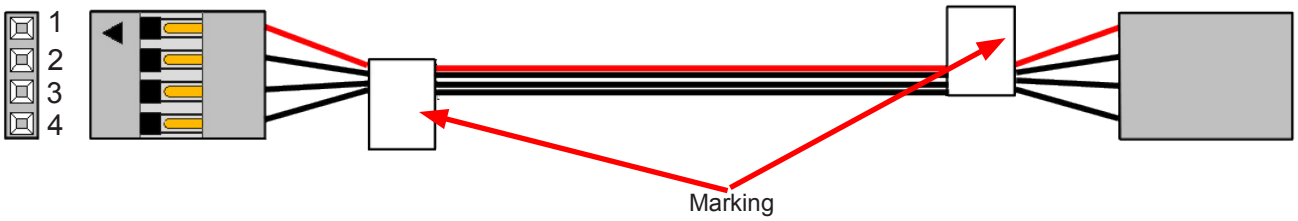


Figure 34 4-pin serial ATA hard drive status cable

Cable Order #	Markings	Instruction
17-1013-01A	HDD “0-3”	Connect to Drive 0-3 on the backplane
17-1013-02A	HDD “4-7”	Connect to Drive 4-7 on the backplane
17-1013-03A	HDD “8-11-”	Connect to Drive 8-11 on the backplane
17-1013-04A	HDD “12-15”	Connect to Drive 12-15 on the backplane
17-1013-05A	HDD “16-19”	Connect to Drive 12-15 on the backplane
17-1013-06A	HDD “20-23”	Connect to Drive 12-15 on the backplane

Table 22 Serial ATA HDD status signal cable list

NOTE: Hard drive that support Pin 11 activity signal inlcude all Western Digital model, Maxtor DiamondMAX 10 , MaXLine III and MaXLine III+

2.3.4 JP10 12-pin Hard Disk Status signal Jumper

The jumper set the hard disk drive status LED signal either from the Hard Disk Drive pin 11 or from the Serial ATA controller. Following the table below for jumper setting information. The default setting has jumper on 1-2 for signal from the Serial ATA controller.

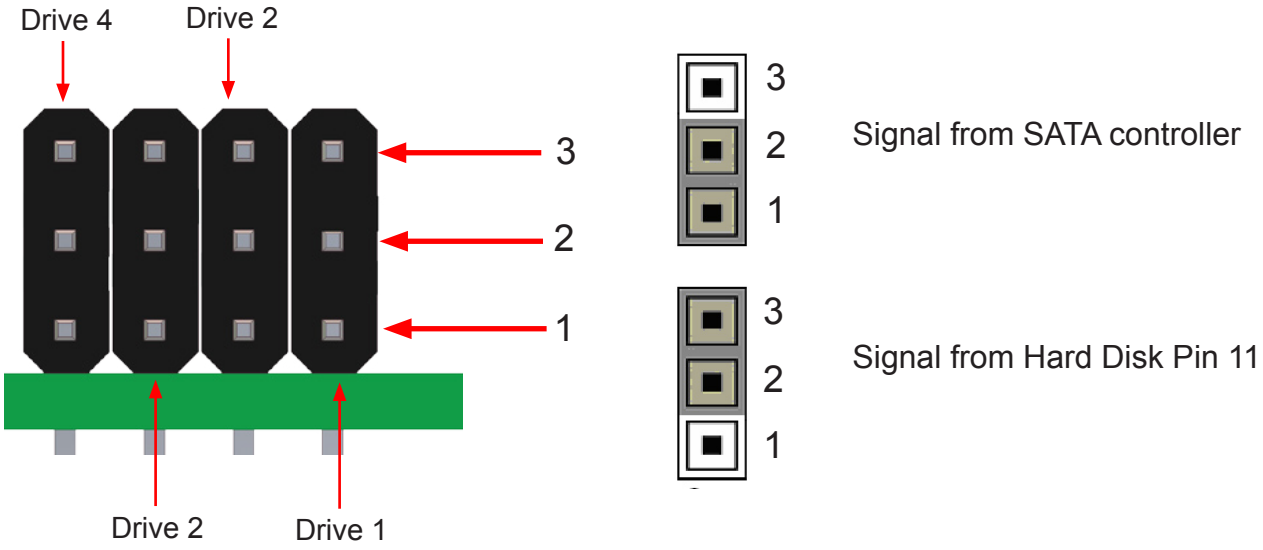


Figure 35 12-pin HDD status signal jumper

NOTE: Hard drive that support Pin 11 activity signal inlcude all Western Digital model, Maxtor DiamondMAX 10 , MaXLine III and MaXLine III+

2.4.5 JP11 MOSFET setup header

JP11 is for MOSFET setup, no use for end-user.

2.4.6 JP12 10 pin power connector header

JP12 10-pin power connector is connected to the system power board to provide power to the Serial ATA backplane and hard disk drives.

2.4 Serial ATA Multilane Backplane Board (order # 16-0109-01A)

Serial ATA blackplane board supports four hot-swap Serial ATA hard disk drive. The following diagram overviews the board layout and pin assignments for connectivity.

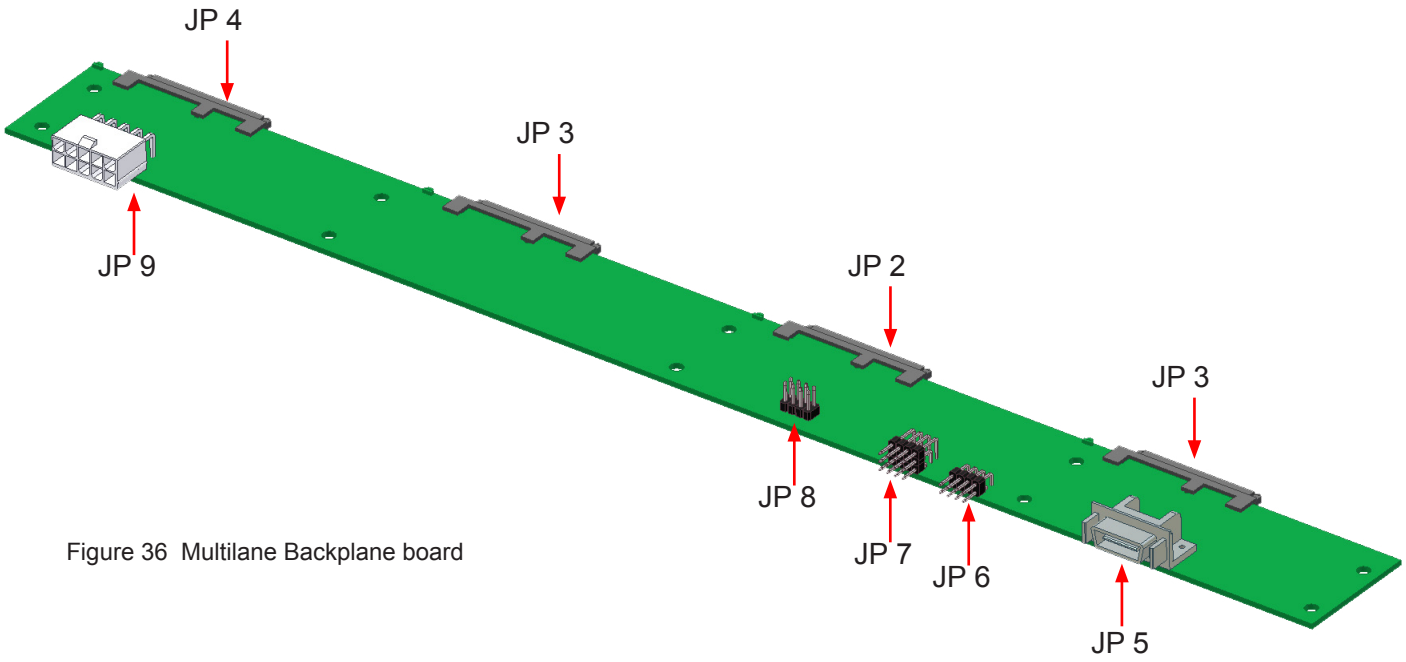


Figure 36 Multilane Backplane board

2.4.1 JP1 to JP4 22-pin Serial ATA Connector Header

JP1 to JP4 connect the backplane to the Serial ATA hard disk drive, the pin assignment is shown on the table below

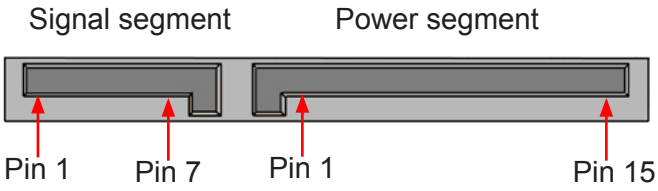


Figure 37 22 pin Serial ATA connector header

Pin	Signal Name
1	Ground
2	DRV RX Positive
3	DRV RX Negative
4	Ground
5	DRV TX Positive
6	DRV TX Negative
7	Ground

Table 23 22 pin SATA signal segment pin assignment

Pin	Signal Name
1	+ 3.3V
2	+ 3.3V
3	+ 3.3V
4	Ground
5	Ground
6	Ground
7	+ 5V
8	+ 5V
9	+ 5V
10	Ground
11	See Note Below
12	Ground
13	+12V
14	+12V
15	+12V

Table 24 22 pin SATA power segment pin assignment

NOTE: Pin 11 on the 22 pin connector power segment will receive drive activity signal directly from the hard disk drive. Refer section 2.3.4 for jumper setting to enable or disable Pin 11 function. The default setting is disable

NOTE: Hard drive that support Pin 11 activity signal inlcude all Western Digital model, Maxtor DiamondMAX 10 , MaXLine III and MaXLine III+

2.4.2 JP5 Multilane Serial ATA Connector Header

JP5 connects the backplane to the Serial ATA controller, the pin assignment is shown on the table below

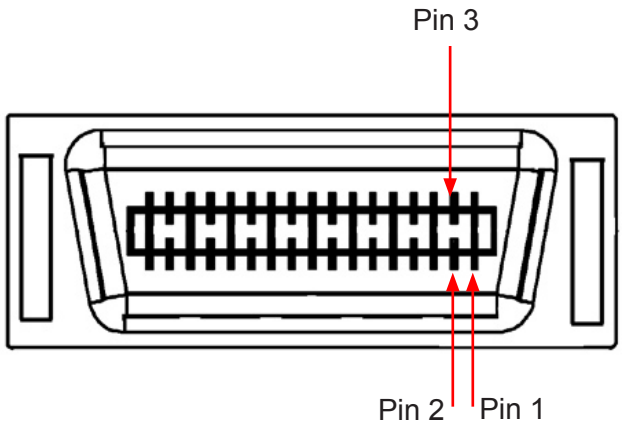


Figure 38 Multilane Serial ATA connector header

Pin	Signal Name
1	GND
2	DRV1 RX Postive
3	DRV 1 RX Negative
4	GND
5	DRV 2 RX Postive
6	DRV 2 RX Negative
7	GND
8	DRV 3 RX Postive
9	DRV 3 RX Negative
10	GND
11	DRV 4 RX Postive
12	DRV 4 RX Negative
13	GND
14	DRV 4 TX Positive
15	DRV 4 TX Negative
16	GND
17	DRV 3 TX Positive
18	DRV 3 TX Negative
19	GND
20	DRV 2 TX Positive
21	DRV 2 TX Negative
22	GND
23	DRV 1 TX Positive
24	DRV 1 TX Negative
25	GND

Table 25 28-pin Serial ATA multilane header pin assignment

2.4.2.1 28-pin Serial ATA cable (17-1005-01A)

The 28 pin Multi-lane cable is used to connect the Serial ATA backplane to the Serial ATA controller. The length of the cable is 15.5 inch.

Figure 39 Multilane cable

2.4.3 JP6 8-pin Serial ATA Activity and Failed signal header

Connect the upper 4 pin to the Serial ATA controller activity signal header and connect the lower 4 pin to Serial ATA controller failed signal header.

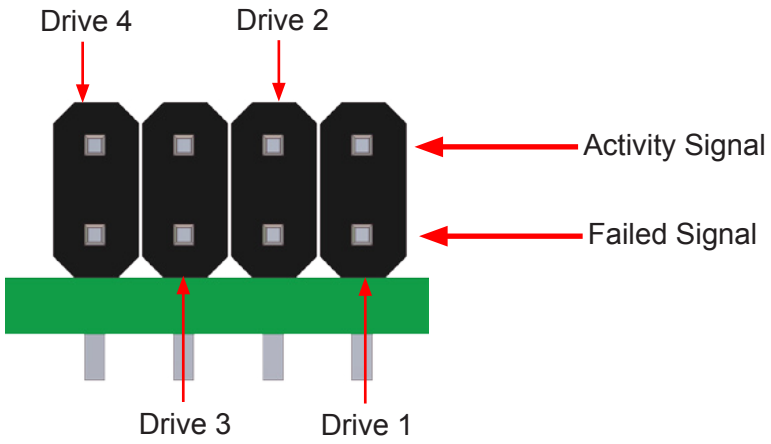


Figure 40 8-pin Serial ATA Hard drive status LED header

2.4.3.1 4-pin HDD status Cable (17-1013-XXX)

The 4 pin HDD status activity cable that is connected from the 8-pin Serial ATA Activity and Failed signal header to the Serial ATA controller status LED header. Refer to your SATA controller documnentation, Each cable has a drive number marked on for easier cable management. Refer the cable part number for markings.

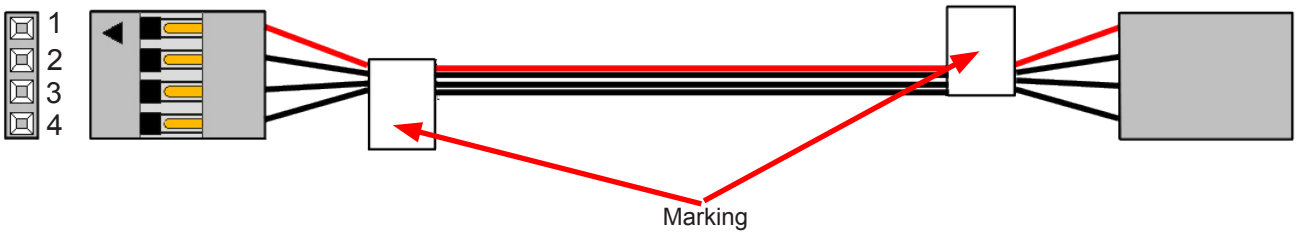


Figure 41 4-pin serial ATA hard drive status cable

Cable Order #	Markings	Instruction
17-1013-01A	HDD “0-3”	Connect to Drive 0-3 on the backplane
17-1013-02A	HDD “4-7”	Connect to Drive 4-7 on the backplane
17-1013-03A	HDD “8-11-”	Connect to Drive 8-11 on the backplane
17-1013-04A	HDD “12-15”	Connect to Drive 12-15 on the backplane
17-1013-05A	HDD “16-19”	Connect to Drive 12-15 on the backplane
17-1013-06A	HDD “20-23”	Connect to Drive 12-15 on the backplane

Table 26 Serial ATA HDD status signal cable list

NOTE: Hard drive that support Pin 11 activity signal inlcude all Western Digital model, Maxtor DiamondMAX 10 , MaXLine III and MaXLine III+

2.4.4 JP7 12-pin Hard Disk Status signal Jumper

The jumper set the hard disk drive status LED signal either from the Hard Disk Drive pin 11 or from the Serial ATA controller. Following the table below for jumper setting information. The default setting has jumper on 1-2 for signal from the Serial ATA controller.

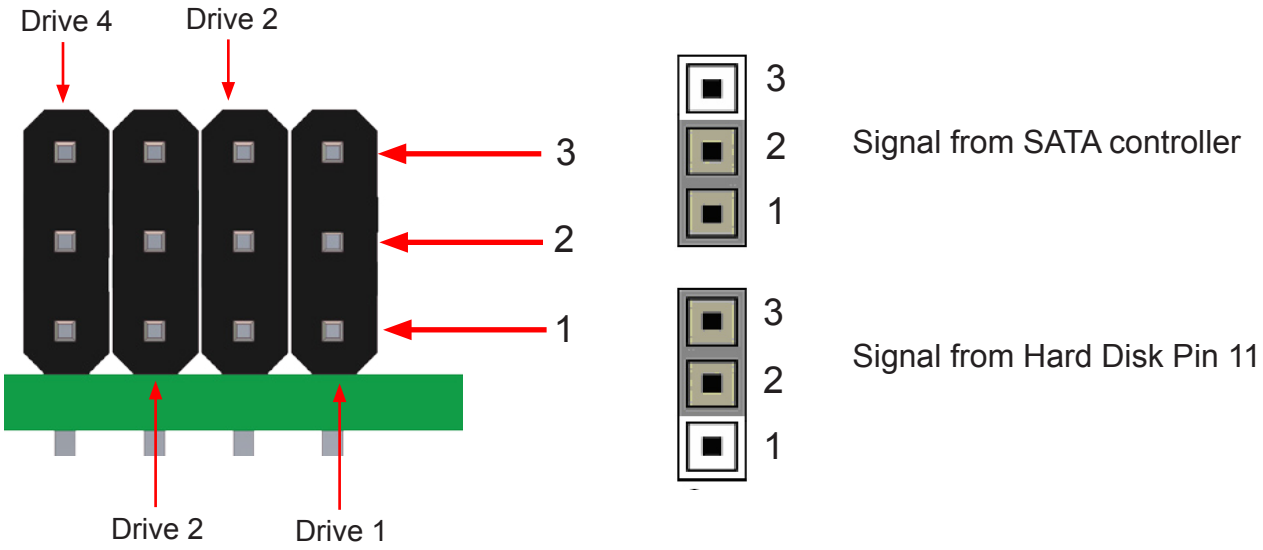


Figure 42 12-pin HDD status signal jumper

NOTE: Hard drive that support Pin 11 activity signal inlcude all Western Digital model, Maxtor DiamondMAX 10 , MaXLine III and MaXLine III+

2.4.5 JP8 MOSFET setup header

JP11 is for MOSFET setup, no use for end-user.

2.4.6 JP9 10 pin power connector header

JP12 10-pin power connector is connected to the system power board to provide power to the Serial ATA backplane and hard disk drives.

2.5 SCSI Backplane Board (order # 16-0108-01A)

SCSI blackplane board supports four hot-swap SCA SCSI hard disk drive. The following diagram overviews the board layout and pin assignments for connectivity.

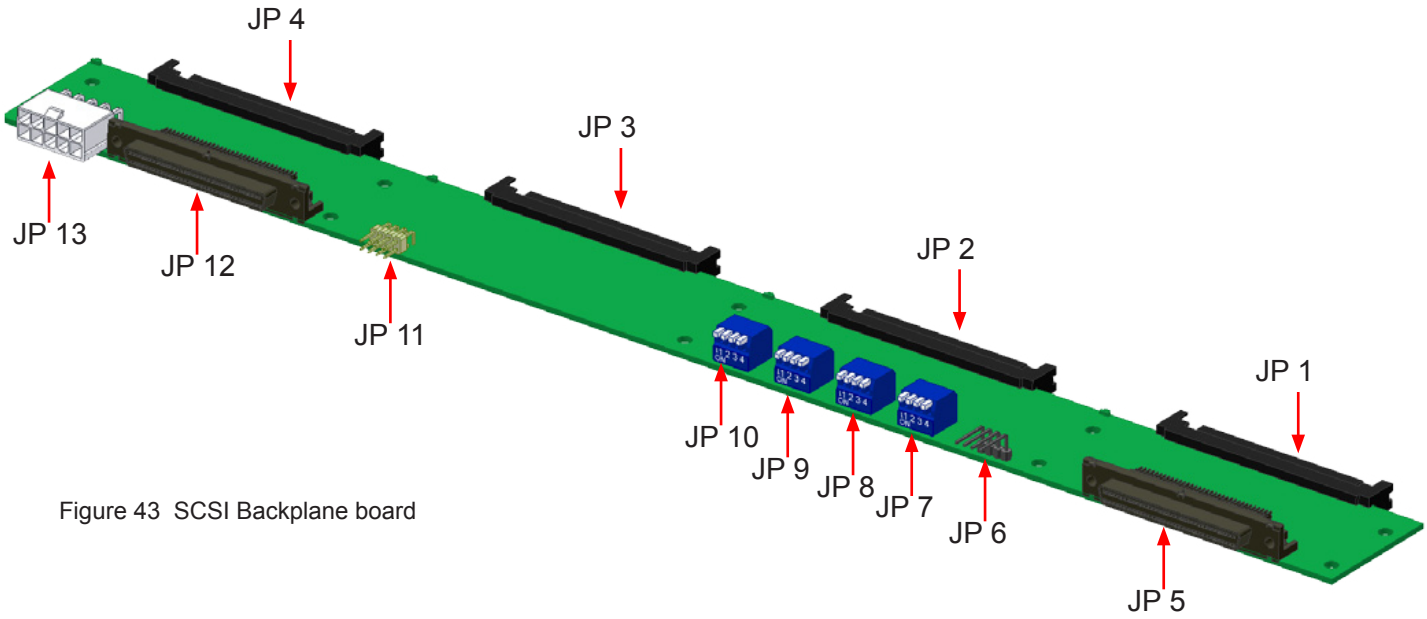


Figure 43 SCSI Backplane board

2.5.1 JP1 to JP4 80-pin SCA Connector Header

JP1 to JP4 connect the backplane to the SCSI hard disk drive, the pin assignment is shown on the table below

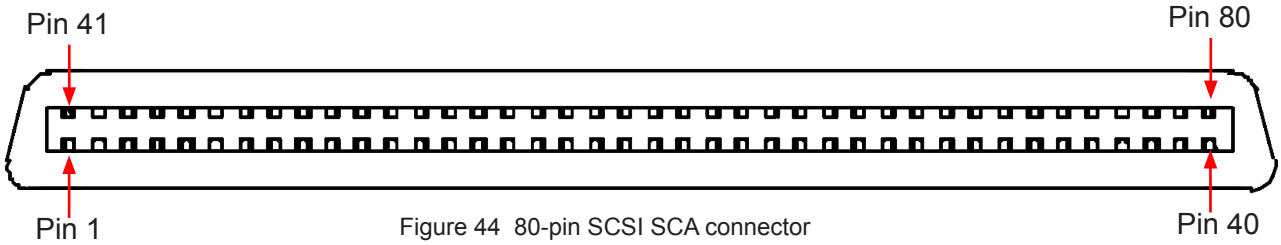


Figure 44 80-pin SCSI SCA connector

Name	Pin	Pin	Name
P12V	1	2	P12V
P12V	3	4	P12V
NC 3V 1	5	6	NC 3V 2
BP SCSI D11N	7	8	BP SCSI D10N
BP SCSI D9N	9	10	BP SCSI D8N
BP SCSI ION	11	12	BP SCSI REQN
BP SCSI CDN	13	14	BP SCSI SELN
BP SCSI MSGN	15	16	BP SCSI RSTN
BP SCSI ACKN	17	18	BP SCSI BSYN
BP SCSI ATNN	19	20	BP SCSI DP0N
BP SCSI D7N	21	22	BP SCSI D6N
BP SCSI D5N	23	24	BP SCSI D4N
BP SCSI D3N	25	26	BP SCSI D2N
BP SCSI D1N	27	28	BP SCSI D0N
BP SCSI DP1N	29	30	BP SCSI DP15N

Name	Pin	Pin	Name
BP SCSI D14N	31	32	BP SCSI D13N
BP SCSI D12N	33	34	P5V
P5V	35	36	P5V
Unsed	37	38	GND
Unsed	39	40	Unsed
GND	41	42	GND
GND	43	44	SCSI MATED
NC 3V CHG	45	46	BP SCSI DIFSNS
BP SCSI D11P	47	48	BP SCSI D10P
BP SCSI D9P	49	50	BP SCSI D8P
BP SCSI IOP	51	52	BP SCSI REQP
BP SCSI CDP	53	54	BP SCSI SELP
BP SCSI MSGP	55	56	BP SCSI RSTP
BP SCSI ACKP	57	58	BP SCSI BSYP
BP SCSI ATNP	59	60	BP SCSI DP0P
BP SCSI D7P	61	62	BP SCSI D6P
BP SCSI D5P	63	64	BP SCSI D4P
BP SCSI D3P	65	66	BP SCSI D2P
BP SCSI D1P	67	68	BP SCSI D0P
BP SCSI DP1P	69	70	BP SCSI D15P
BP SCSI D14P	71	72	BP SCSI D13P
BP SCSI D12P	73	74	SCSI MATED
GND	75	76	GND
HD ACT LED L	77	78	Unused
Unused	79	80	Unused

Table 27 80-pin SCSI SCA connector pin assignment

2.5.2 JP5 and JP12 HD68 Connector Header

JP5 or JP12 is 68 pin SCSI connector. Either one of the connector is used to interface the SCSI backplane with either on-board SCSI channel of the system board or and add-in SCSI controller. The other connector is used to for termination or daisy chain with another SCSI backplane board

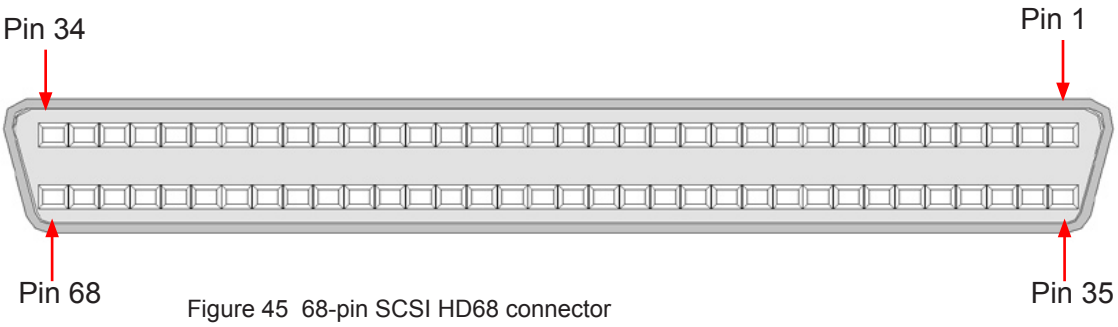


Figure 45 68-pin SCSI HD68 connector

Name	Pin	Pin	Name
BP SCSI D12P	1	2	BP SCSI D12N
BP SCSI D13P	3	4	BP SCSI D13N
BP SCSI D14P	5	6	BP SCSI D14N
BP SCSI D15P	7	8	BP SCSI D15N
BP SCSI DP1P	9	10	BP SCSI DP1N
BP SCSI D0P	11	12	BP SCSI D0N
BP SCSI D1P	13	14	BP SCSI D1N
BP SCSI D2P	15	16	BP SCSI D2N
BP SCSI D3P	17	18	BP SCSI D3N
BP SCSI D4P	19	20	BP SCSI D4N
BP SCSI D5P	21	22	BP SCSI D5N
BP SCSI D6P	23	24	BP SCSI D6N
BP SCSI D7P	25	26	BP SCSI D7N
BP SCSI DP0P	27	28	BP SCSI DP0N
GND	29	30	GND
BP SCSI DIFSNS	31	32	GND
TERMI PWR	33	34	TERMI PWR
TERMI PWR	35	36	TERMI PWR
Unused	37	38	Unused
GND	39	40	GND
BP SCSI ATNP	41	42	BP SCSI ATNN
GND	43	44	GND
BP SCSI BSYP	45	46	BP SCSI BSYN
BP SCSI ACYP	47	48	BP SCSI ACKN
BP SCSI RSTP	49	50	BP SCSI BSTN
BP SCSI MSGP	51	52	BP SCSI MSGN
BP SCSI SELP	53	54	BP SCSI SELN
BP SCSI CDP	55	56	BP SCSI CDN
BP SCSI REQP	57	58	BP SCSI REQN
BP SCSI IOP	59	60	BP SCSI ION
BP SCSI D8P	61	62	BP SCSI D8N
BP SCSI D9P	63	64	BP SCSI D9N
BP SCSI D10P	65	66	BP SCSI D10N
BP SCSI D11P	67	68	BP SCSI D11N

Table 28 68-pin SCSI HD68 connector pin assignment

2.5.2.1 HD-68 SCSI Cable from backplane to host (order# 17-1016-01A)

The HD-68 pin cable is used to connect the SCSI backplane to the SCSI controller. The length of the HD-68 pin cable is 21.5 inch

Figure 46 HD68 SCSI cable

NOTE: Use the cable provide by Enlight USA only, the cable length is designed to rprevent reflection resonance

2.5.2.2 HD-68 SCSI LVD320/SE Terminator (order# 16-0117-01A)

The LVD320/SE terminator is connected to the HD68 connector header of the SCSI backplane, it is used to avoid reflections from the ends of the SCSI bus. If the SCSI bus is not terminated, the signal pulses will reflect off these the open end and travel back along the bus in the other direction, which results in adding and cancelling of signal amplitudes that will distort and corrupt the SCSI singal.

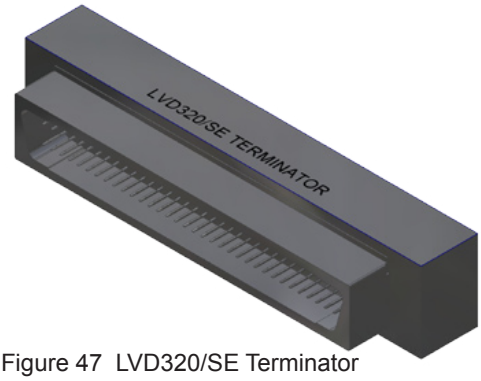


Figure 47 LVD320/SE Terminator

NOTE: Make sure the SCSI ID number are not duplicate in the SCSI channel

2.5.3 JP6 Drive failed LED Header

JP6 connect to the SCSI controller through a 4 pin cable to report SCSI hard disk drvie failed. It is connnected with LED signal cable same as the cable listed in Table 26

Name	Pin	Pin	Name
Drive 1 failed signal	1	2	Drive 2 failed signal
Drive 3 failed signal	3	4	Drive 4 failed signal

Table 29 SCSI drive failed signal pin assignment

2.5.4 JP7 - JP10 Drive failed LED Header

JP7 to JP10 are piano switch to select the Drive SCSI ID, refer the following table to set the SCSI ID of the SCSI backplane

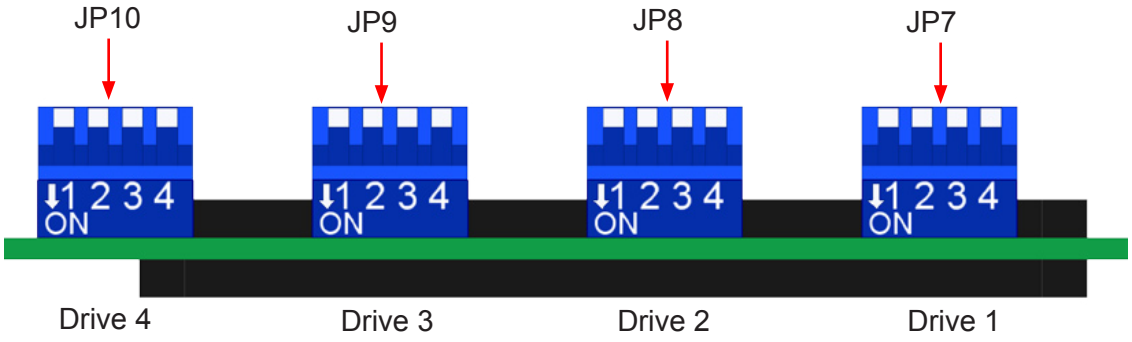


Figure 48 SCSI ID switch

SCSI ID	Piano Switch 1	Piano Switch 2	Piano Switch 3	Piano Switch 4
0	OFF	OFF	OFF	OFF
1	ON	OFF	OFF	OFF
2	OFF	ON	OFF	OFF
3	ON	ON	OFF	OFF
4	OFF	OFF	ON	OFF
5	ON	OFF	ON	OFF
6	OFF	ON	ON	OFF
7	ON	ON	ON	OFF
8	OFF	OFF	OFF	ON
9	ON	OFF	OFF	ON
10	OFF	ON	OFF	ON
11	ON	ON	OFF	ON
12	OFF	OFF	ON	ON
13	ON	OFF	ON	ON
14	OFF	ON	ON	ON
15	ON	ON	ON	ON

Table 30 SCSI ID settings

NOTE: Avoid setting SCSI ID 7 for SCSI Hard Disk Drive because most of the HBA default ID is set to ID 7

NOTE: Make sure the SCSI ID number are not duplicate in the SCSI channel

2.5.5 JP11 MOSFET setup header

JP11 is for MOSFET setup, no use for end-user.

2.5.6 JP12 10 pin power connector header

JP12 10-pin power connector is connected to the system power board to provide power to the SCSI backplane and hard disk drives.

2.5.7 Daisy Chain the SCSI backplanes

You can daisy chain the SCSI backplanes by connecting the 68-pin connector as shown with the SCSI daisy chain cable (order# 17-1016-02A)

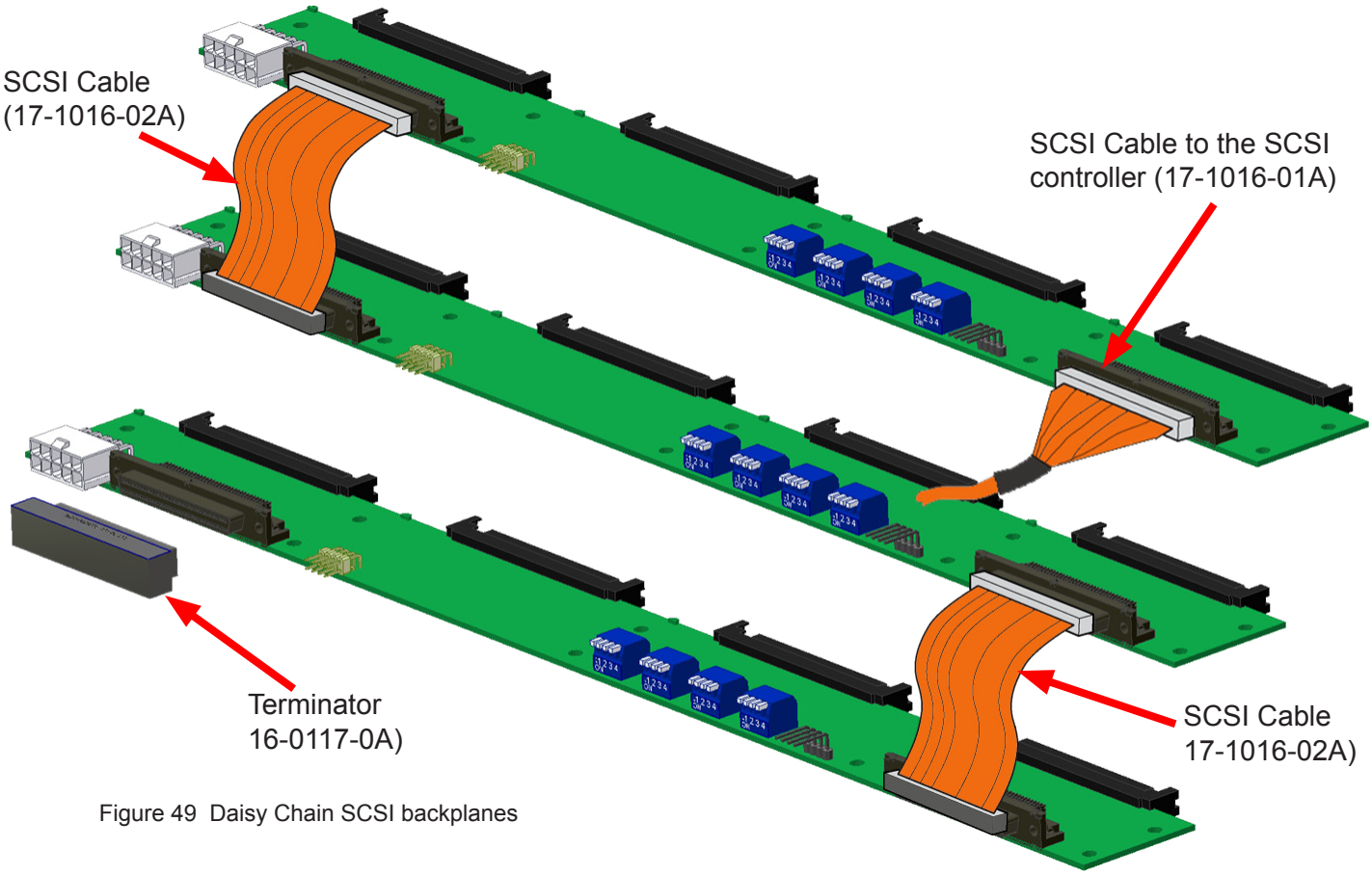


Figure 49 Daisy Chain SCSI backplanes

NOTE: Make sure the SCSI ID number are not duplicate in the SCSI channel

2.5.2.1 HD-68 SCSI Cable Daisy (order# 17-1016-02A)

Figure 50 SCSI cable used for daisy chain

NOTE: Use the cable provide by Enlight USA only, the cable length is designed to rprevent reflection resonance

2.8 Slim Power Board (16-0103-01A)

The ESR series chassis provides a Slim Power Board to enable easy cable management. The Slim Power Board provides power to slim-line device such as slim FDD, slim CD-Rom and 2.5” IDE hard disk drive. The Slim Power Board has preinstall in the chassis.

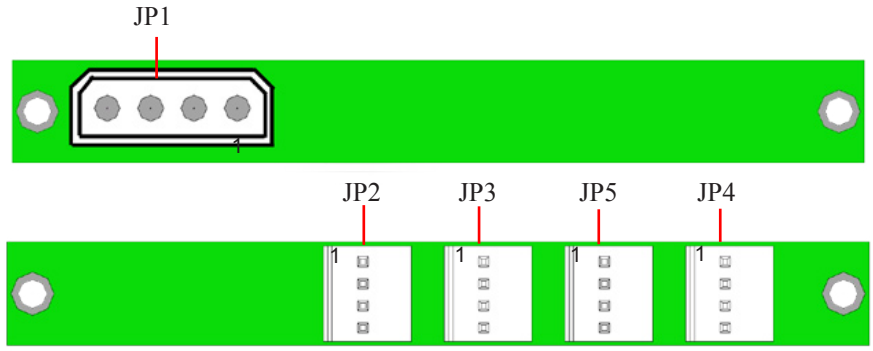


Figure 51 Slim-line Power Board (order # 16-0103-01A)

2.8.1 JP1 4 pin Peripheral Power Connector header

Jumper 1 (JP1) connector has 4 pins and is cabled to the System Power Board JPX to provide power to the Slim Power Board through DC power cable (order # 17-1007-01A) Refer section 2.1.X for the cable pin assignment.

Pin	Signal Name
1	+ 12V
2	Ground (COM)
3	Ground (COM)
4	+ 5V

Table 31 Peripheral Power (JP1) Pin assignment

2.8.2 JP2-JP4 4 pin mini Power Connector header

JP2 to JP4 provides DC power to slim-line device through mini 4pin DC power cable (order # 17-1018-01A) and 4pin-to-2pin DC power cable (order # 17-1008-XX)

Pin	Signal Name
1	+ 12V
2	Ground (COM)
3	Ground (COM)
4	+ 5V

Table 32 Mini Power (JP2-JP4) Pin assignment

NOTE: The power cable used to connect the slim CD/DVD-Rom and the slim power board is included in the slim power board in JP2

2.8.3 Mini 4 pin DC power cable (17-1018-01A)

J1 and J2 of Mini 4 pin DC power cable has the same pin assignment and polarity, therefore, connect either J1 or J2 to the slim Floppy Disk PCB and connect the other end of the cable to the Slim Power Board. Refer section 3.7 for instruction.

Figure 52 Mini 4 pin DC Power cable (order # 17-1018-01A)

2.8.4 4 pin-to-2 pin DC power cable (17-1008-XX)

Connect J1 to the 2.5” IDE hard disk device PCB and connect J2 to the Slim Power Board. Refer section 3.6 for instruction. XX refer as extension number for cable length which is shown on the table below

Figure 53 4 pin-to-2 pin DC Power cable (order # 17-1008-XX)

Cable Order #	Cable length (inch)	Instruction
17-1008-01A	4.7”	Connect to Drive 1. Refer to section 3.10
17-1008-02A	7.0”	Connect to Drive 2. Refer to section 3.10
17-1008-03A	11.5”	Connect to Drive 3. Refer to section 3.10

Table 33 4pin-to-2pin power cable list

2.9 Slim Floppy Disk Board (Order #16-0104-01)

The ESR series chassis provides a Slim Floppy Disk Board bay that can be configured for a slim-line floppy disk drive. The floppy disk drive is mounted on a tool-less tray which allow for easy installation and removal form the chassis. Refer section 3.7 for instruction. The Slim Power Board has preinstall in the chassis.

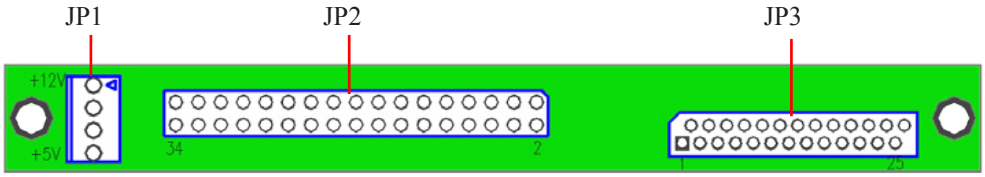


Figure 54 Slim-line Floppy Disk Board (order # 16-0104-01A)

2.9.1 JP1 4 pin Peripheral Power Connector header

Pin	Signal Name
1	+ 12V
2	Ground (COM)
3	Ground (COM)
4	+ 5V

Table 34 Mini 4-pin Power header (JP1) Pin assignment

2.9.2 JP2 34 pin Floppy Disk Connector header

Name	Pin	Pin	Name
GND	1	2	FD DENSEL0
GND	3	4	2M MEDIA
GND	5	6	FD DRATE0 L
GND	7	8	FD INDEX L
GND	9	10	FD MTR0 L
GND	11	12	FD DS1 L
GND	13	14	FD DS0 L
GND	15	16	FD MTR1 L
Unused	17	18	FD DIR L
GND	19	20	FD STEP L
GND	21	22	FD WDATA L
GND	23	24	FD WGATE L
GND	25	26	FD TRK0 L
Unused	27	28	FD WP L
GND_FDD	29	30	FD RDATA L
GND	31	32	FD HDSEL L
MSEN0	33	34	FD DSKCHG L

Table 35 34-pin floppy connector pin assignment

2.9.2.1 34pin Floppy Disk Drive cable (07-1004-01A)

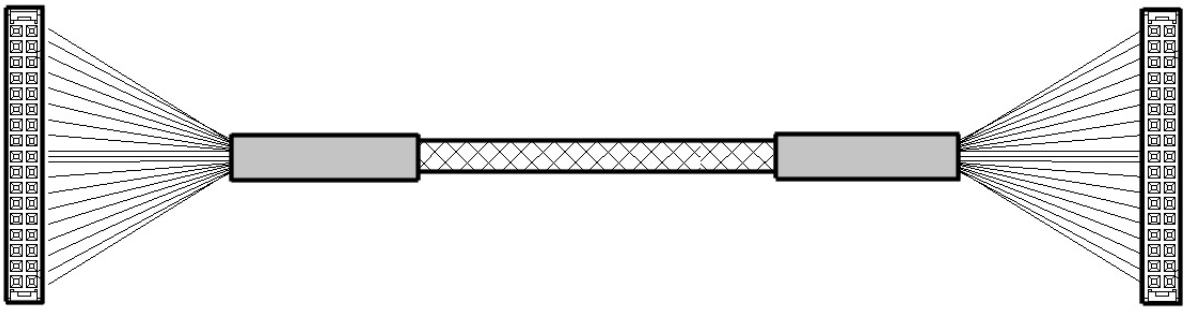


Figure55 34pin FDD cable (order # 17-1004-01A)

2.9.3 JP3 26 pin Slim-line Floppy Drive Connector Header

Name	Pin	Pin	Name
+ 5V	1	2	INDEX
+ 5V	3	4	DRIVE SELECT 0
+ 5V	5	6	DISK CHANGE
N.C.	7	8	READY
HD (HIGH: HD)	9	10	MOTOR ON
N.C.	11	12	DIRECTION SELECT
MODE SELECT	13	14	STEP
GND	15	16	IDE SDD <14>
GND	17	18	IDE SDD <15>
GND	19	20	TRACK 00
GND	21	22	WRITE PROTECT
GND	23	24	READ DATA
GND	25	26	SIDE ONE SELECT

Table 36 26-pin slim-line floppy drive connector pin assignment

2.9.3.1 26 pin Slim-line Floppy Drive flat cable (17-1019-01A)

Figure 56 26-pin Slim-line FDD flat cable (order # 17-1019-01A)

2.10 Slim CD/DVD-Rom Board (16-0105-01)

The ESR series chassis provides a slim-line CD/DVD-Rom bay that can be configured for either CDROM or DVD. The peripheral drive is mounted on a tool-less tray which allow for easy installation and removal form the chassis. Refer section 3.8 for instruction. The following table defines the connector pin assignments on the slim CD/DVD-Rom Board. This board is located in the accessories box.

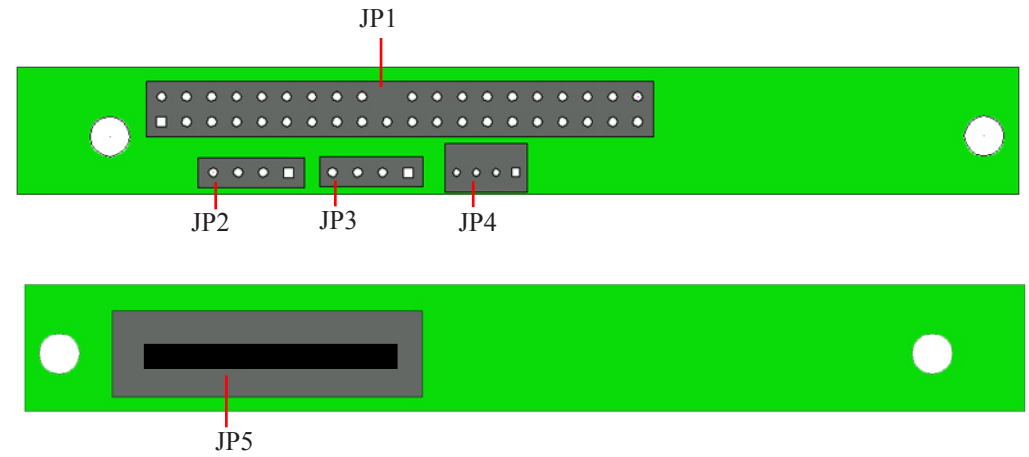


Figure xx Slim CD/DVD-Rom Board (order # 16-0105-01A)

2.10.1 JP1 40pin IDE head pin assignment

Jumper 1 (JP1) connector has 40 pins and is cabled to the IDE cable. The PCB support cable select only so Master/Slave is determined by the IDE cable.

Name	Pin	Pin	Name
RST IDE S L	1	2	GND
IDE SDD <7>	3	4	IDE SDD <8>
IDE SDD <6>	5	6	IDE SDD <9>
IDE SDD <5>	7	8	IDE SDD <10>
IDE SDD <4>	9	10	IDE SDD <11>
IDE SDD <3>	11	12	IDE SDD <12>
IDE SDD <2>	13	14	IDE SDD <13>
IDE SDD <1>	15	16	IDE SDD <14>
IDE SDD <0>	17	18	IDE SDD <15>
GND	19	20	Unused
IDE SDDREQ	21	22	GND
IDE SDIOW L	23	24	GND
IDE SDLOR L	25	26	GND
IDE SIORDY	27	28	IDEP ALE H
IDE SDDACK L	29	30	GND
IDE IDE S	31	32	NC IDEIO16 L
IDE SDA<1>	33	34	NC CBL DET S
IDE SDA<0>	35	36	IDE SDA<2>
IDE SDCS0 L	37	38	IDE SDCS1 L
IDE SEC HD ACT L	39	40	GND

Table 37. 40 pin IDE connector pinout (JP1)

2.10.2 One-to-One IDE cable (order # 17-1003-XX)

Connect (J1) connector to the server board and J2 to the slim CD/DVD-Rom Board. XX refer as extension number for cable length which is shown on the table below

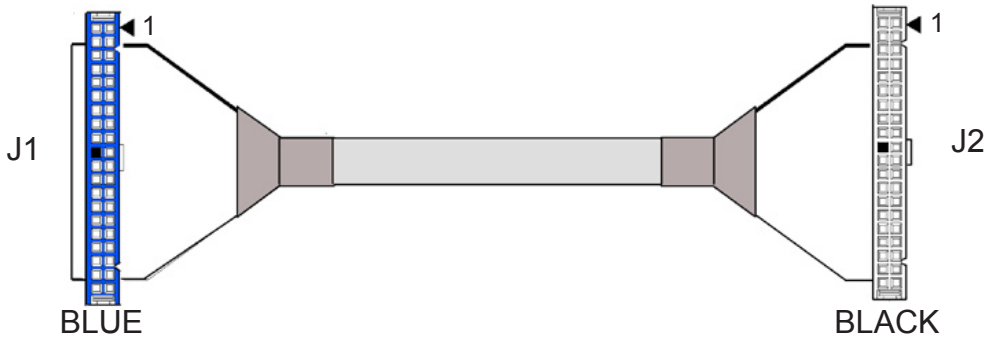


Figure 58 Single drive IDE cable

Cable Order #	Cable length (inch)	Instruction
17-1003-01A	33.5”	Connect to the Slim CD/DVD-Rom Board
17-1003-02A	27.5”	Connect to Drive 1. Refer to section 3.10
17-1003-03A	25.5”	Connect to Drive 2. Refer to section 3.10
17-1003-04A	21.5”	Connect to Drive 3. Refer to section 3.10

Table 38 40-pin single drvie IDE cable list

2.10.3 Two Drives IDE cable (order # 17-1017-01A)

The 33 inch long Two Drive IDE cable is used for IDE channel that require both the Master and Slave Drive, it is compliant with ATA 5.0 Standard for cable select setting. Connect (J1) connector to the server board and J2 to the Slave Drive and J3 to the Master Drive. The length between J2 and J3 is 10 inch

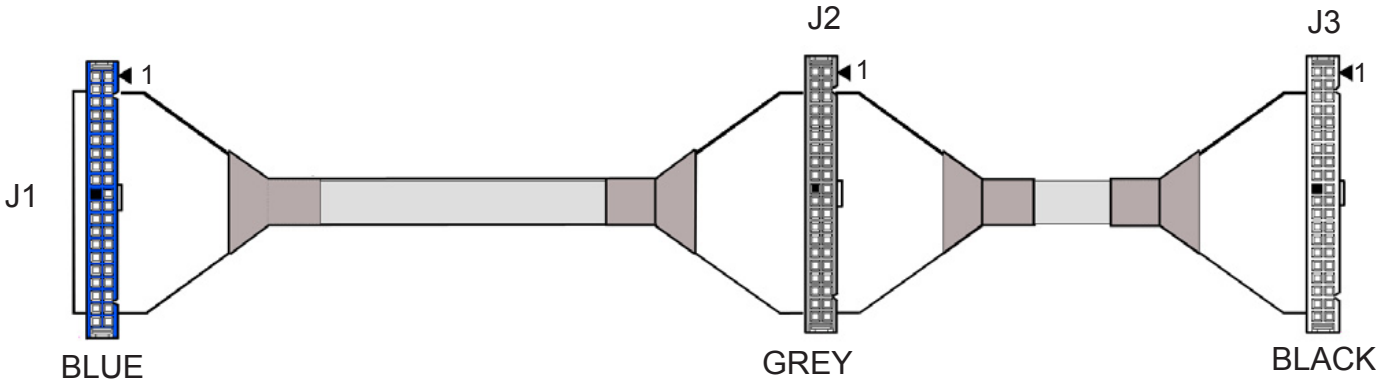


Figure 59 Two drive IDE cable (order # 17-1017-01A)

NOTE: All IDE cable used in the ESR-Series are high density and high quality 80-conductor Ultra DMA cables

2.10.2 JP2 Power Input header pin assignment

Require to connect to the power source to power up the Slim CD/DVD Rom. Refer section 3.6 for instruction.

Pin	Name
1	+12V
2	GND
3	GND
4	+5V

Table 39. Mini-4 pin drive power connector header pinout (JP2)

NOTE: The power cable used to connect the slim CD/DVD-Rom and the slim power board is included in the slim power board. Refer to section 2.8.2

2.10.3 JP3 2.54mm pitch Audio output header

The Slim CD/DVD-Rom Board provides with analogue audio output connector that can be connected to an audio amplifier or a sound card's internal audio input connector using a sound cable terminated with a standard MPC-3 type, 4 pin connector.

Pin	Name
1	Left Signal
2	GND
3	GND
4	Right Signal

Table 40. 2.54mm pitch Audio Output connector header pinout

NOTE: The audio output cable is not included with the ESR series chassis

2.10.4 JP4 2.0mm pitch Audio output header

Pin	Name
1	Left Signal
2	GND
3	GND
4	Right Signal

Table 41.2.0mm pitch Audio Output connector header pinout (JP2)

NOTE: The audio output cable is not included with the ESR series chassis

2.10.5 JP5 50 pin Direct Plug Connector

JP5 is the 50pin Direct Plug slim CD/DVD-Rom connector that provides interconnect between the drive, power supply and server board. The 50 pin direct plug connector pinout is listed in the table below. Refer Section 3.8 for installation instruction.

Name	Pin	Pin	Name
RSV LCM	1	2	RSV RCM
RSV GND	3	4	GND
RST IDE S L	5	6	IDE SDD <8>
IDE SDD <7>	7	8	IDE SDD <9>
IDE SDD <6>	9	10	IDE SDD <10>
IDE SDD <5>	11	12	IDE SDD <11>
IDE SDD <4>	13	14	IDE SDD <12>
IDE SDD <3>	15	16	IDE SDD <13>
IDE SDD <2>	17	18	IDE SDD <14>
IDE SDD <1>	19	20	IDE SDD <15>
IDE SDD <0>	21	22	IDE SDDREQ
GND	23	24	IDE SDIOR L
IDE SDLOW L	25	26	GND
IDE SIORDY	27	28	IDE SDDACK L
IRQ IDE S	29	30	NC IDEIO16 L
IDE SDA<1>	31	32	NC CBL DET S
IDE SDA<0>	33	34	IDE SDA<2>
IDE SDCS0 L	35	36	IDE SDCS1 L
IDE SEC HD ACT L	37	38	+5V
+5V	39	40	+5V
+5V	41	42	+5V
GND	43	44	GND
GND	45	46	GND
IDEP ALE H	47	48	GND
	49	50	

Table 43 50-pin slim-line CD-Rom drive connector pinout (JP5)

2.11 DB 9 Cable Pin Assignment (order # 17-1001-XX)

The ESR-Series chassis provide with DB9 Serial ports which allows administrators access the system and.or controll external device through a serial console session using UNIX commands such as hyper terminal. The pin assignment of J1 is tabled on section 1.3.2. However, there are at least two types of pin assignment on J2, which are describe on the tables below.

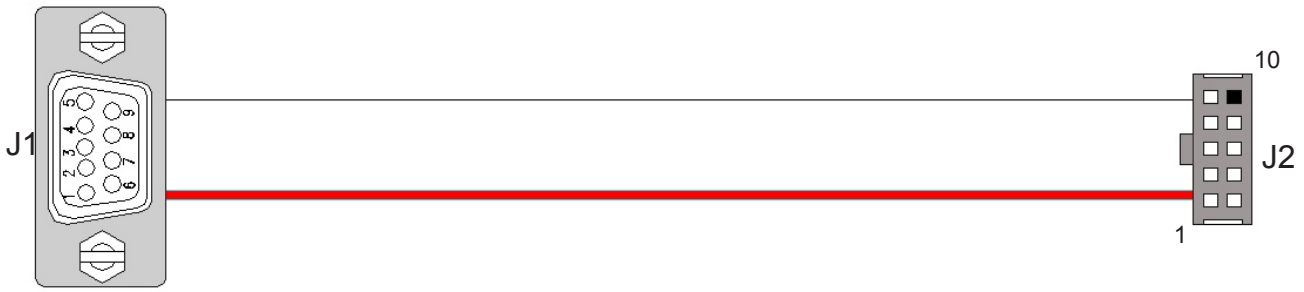


Figure 60 DB9 Serial Cable (order # 17-1001-XXX)

2.11.1 DB 9 Cable Pin Assignment for standard DB9 specification (order # 17-1001-01A)

The ESR-Series chassis provide with the standard serial port DB9 specification cable. The pin assignment of J2 is shwon on the table below.

Name	Pin	Pin	Name
DCD (Data Carrier Detect)	1	2	DSR (Data Set Ready)
RXD (Receive Data)	3	4	RTS (Request To Send)
TXD (Transmit Data)	5	6	CTS (Clear To Send)
DTR (Data Terminal Ready)	7	8	RI (Ring Indicator)
GND	9	10	Key

Table 43.DB9 cable pin out for 17-1001-01A (JP2)

2.11.2 DB 9 Cable Pin Assignment for inter S875WP1-E board (order # 17-1001-02A)

The intel S875WP-E server board has its unique DB9 pin assignment header that is different than the regular DB 9 serial specification. If you are using the intel S875WDP-E, you need to order this DB9 cable . The cable pin assignment of 17-1001-02A is shown below.

Name	Pin	Pin	Name
DCD (Data Carrier Detect)	1	2	RXD (Receive Data)
TXD (Transmit Data)	3	4	DTR (Data Terminal Ready)
GND	5	6	DSR (Data Set Ready)
RTS (Request To Send)	7	8	CTS (Clear To Send)
RI (Ring Indicator)	9	10	Key

Table 44.DB9 cable pin out for 17-1001-02A (JP2)

NOTE: If you see another DB-9 pin assignment which is different than the above two pinout. Please email this information to the author at sfu@enlightcorp.com

2.12 Slim-line 2.5” to 3.5” IDE Drive Adapter (order # 16-0118-01A)

The ESR-Series chassis provide with Slim-line 2.5” to 3.5” IDE drive Adapter. PIN 1 location of the adapter is shown on the figure below. See section 3.5 for instruction on installing a slim-line IDE Hard Disk Drive

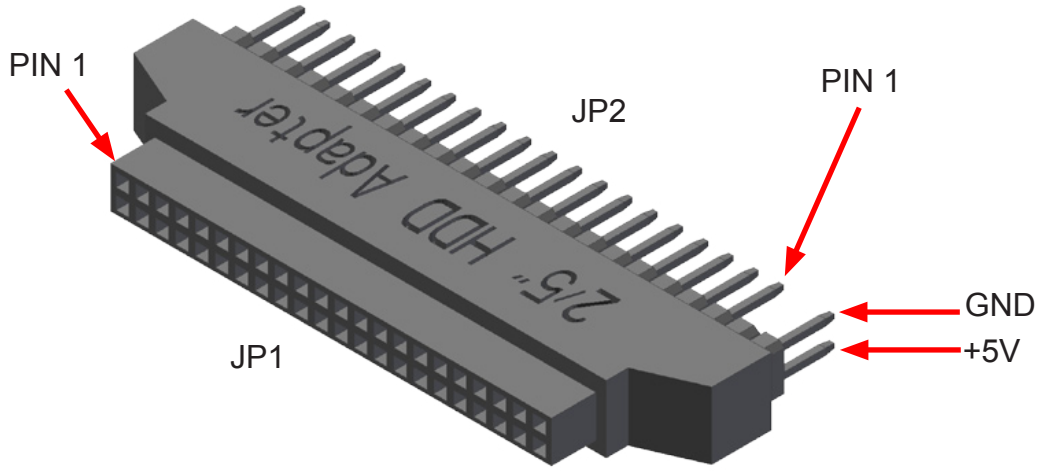


Figure 61 2.5” to 3.5” IDE adapter (order # 18-0007-01A)

2.12.1 JP1 44pin 2.5” IDE head pin assignment

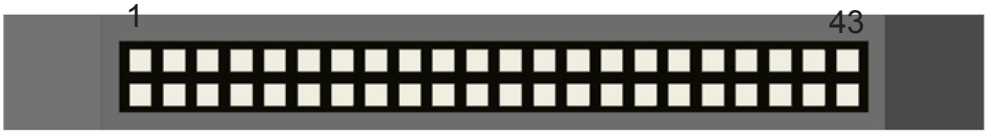


Figure 62 JP1 connector layout, 2.5” to 3.5” IDE adapter

Name	Pin	Pin	Name
RST IDE S L	1	2	GND
IDE SDD <7>	3	4	IDE SDD <8>
IDE SDD <6>	5	6	IDE SDD <9>
IDE SDD <5>	7	8	IDE SDD <10>
IDE SDD <4>	9	10	IDE SDD <11>
IDE SDD <3>	11	12	IDE SDD <12>
IDE SDD <2>	13	14	IDE SDD <13>
IDE SDD <1>	15	16	IDE SDD <14>
IDE SDD <0>	17	18	IDE SDD <15>
GND	19	20	Unused
IDE SDDREQ	21	22	GND
IDE SDIOW L	23	24	GND
IDE SDLOR L	25	26	GND
IDE SIORDY	27	28	IDEP ALE H
IDE SDDACK L	29	30	GND
IDE IDE S	31	32	NC IDEIO16 L
IDE SDA<1>	33	34	NC CBL DET S
IDE SDA<0>	35	36	IDE SDA<2>
IDE SDCS0 L	37	38	IDE SDCS1 L
IDE SEC HD ACT L	39	40	GND
+5V (LOGIC)	41	42	+5V (MOTOR)
GND	43	44	RESERVED

Table 45. 44-pin 2.5 inch adapter IDE connector pinout (JP1)

2.12.2 JP2 2+40pin IDE head pin assignment

JP2 will match regular 40pin IDE cable as shown on Section 2.10.2 and Section 2.10.3. Install cable shown on section 2.8.4, with Gound signal on A and +5V on B,

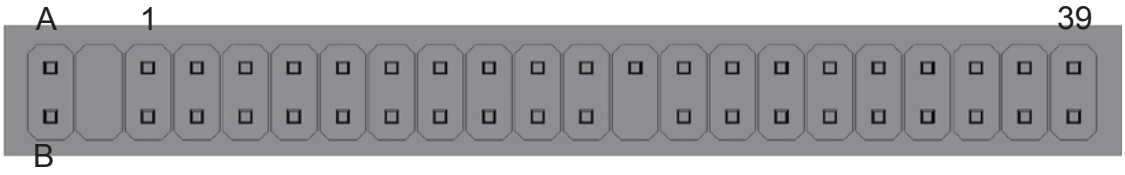


Figure 63 JP2 connector layout

Name	Pin	Pin	Name
GND	A	B	+5V
RST IDE S L	1	2	GND
IDE SDD <7>	3	4	IDE SDD <8>
IDE SDD <6>	5	6	IDE SDD <9>
IDE SDD <5>	7	8	IDE SDD <10>
IDE SDD <4>	9	10	IDE SDD <11>
IDE SDD <3>	11	12	IDE SDD <12>
IDE SDD <2>	13	14	IDE SDD <13>
IDE SDD <1>	15	16	IDE SDD <14>
IDE SDD <0>	17	18	IDE SDD <15>
GND	19	20	Unused
IDE SDDREQ	21	22	GND
IDE SDIOW L	23	24	GND
IDE SDLOR L	25	26	GND
IDE SIORDY	27	28	IDEP ALE H
IDE SDDACK L	29	30	GND
IDE IDE S	31	32	NC IDEIO16 L
IDE SDA<1>	33	34	NC CBL DET S
IDE SDA<0>	35	36	IDE SDA<2>
IDE SDCS0 L	37	38	IDE SDCS1 L
IDE SEC HD ACT L	39	40	GND

Table 46. 40+2 pin IDE connector pinout (JP2)

Connecting the adapter to the drive incorrectly can serverly damage or destroy your hard disk drive. The location of PIN 1 on the hard drive depends on the model of hard drive you are using, If you are unsure of the location of PIN 1 on your hard drive, contact the hard disk drive manufacturer before attempting to connect the drive.

2.13 System Fan Edge Adapter Board (order # 16-0106-01A)

The ESR series support two hot-swap system fans and the interconnect between the fan and the system monitor board is through the Fan Edge Adapter Board. The fan is connected the edge board through the 3 pin connector (4 pin connector if it is PWM fan)

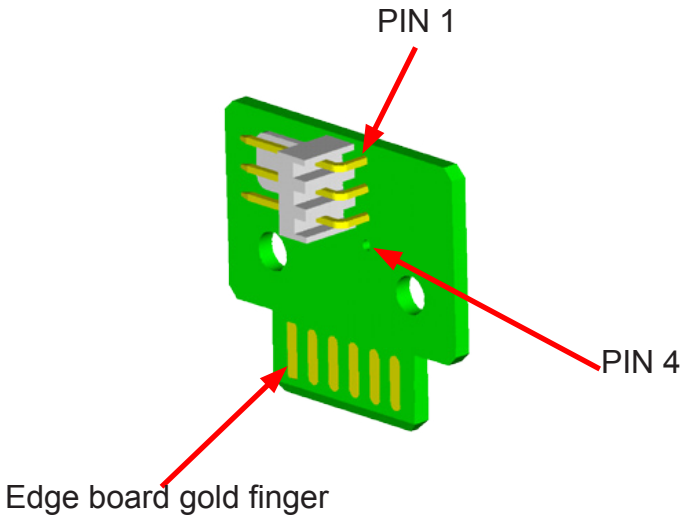


Figure 64 System Fan Edge Adapter Board

Pin	Signal Name
1	Gound
2	+12V
3	Fan Tach out Signal
4	Fan PWM out Signal

Table 47 Fan edge board connector pin assignment

Chapter 3. Integration Steps

This section provides procedures for installing, removing and replacing components and assemblies in your ESR seires storage system:

Unless otherwise noted, each procedure assumes the following conditions:

You have read the safety instructions of this user manual. Always follow the instructions closely. While working on the system, do not attempt to service the system except as explained in this guide and elsewhere in Enlight Corp USA documentation.

You can install, replace or reinstall a part by performing the removal procedure in reverse order, unless additional information is provided.

Recommended Tools

Phillips-head screwdriver
5mm nut driver
Wrist grounding strap
Standard flat-blade screwdriver

The Power Button on the front panel DOES NOT turn off the AC power, you MUST unplug the AC power cords

To maintain and ensure regulation compliance, the fully integrated system should be tested, certified and/or documented to illustrate compliance to the regional regulations and laws for where the product will be sold. The peripherals such as hard disk drive, CD-Rom and add-in-cards choosen for integration should have individual regulatory approvals.

3.1 Removing and Replacing the top cover

WARNING: DO NOT USE TOP THUMB SCREW TO LIFT CHASSIS! These thumb screws are used only to install and remove the top cover only!

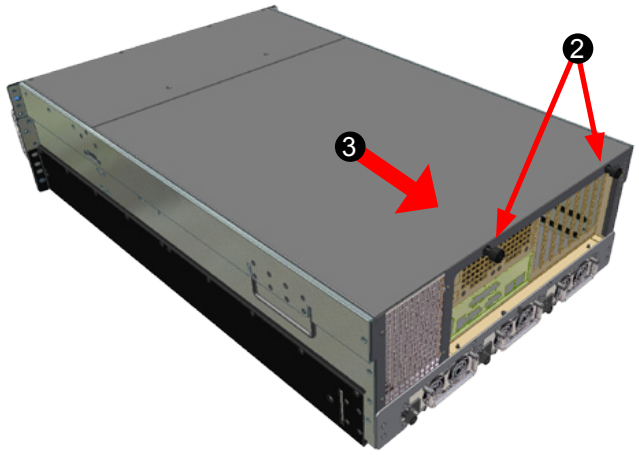


Figure 65 Loosen the back cover thumbscrews

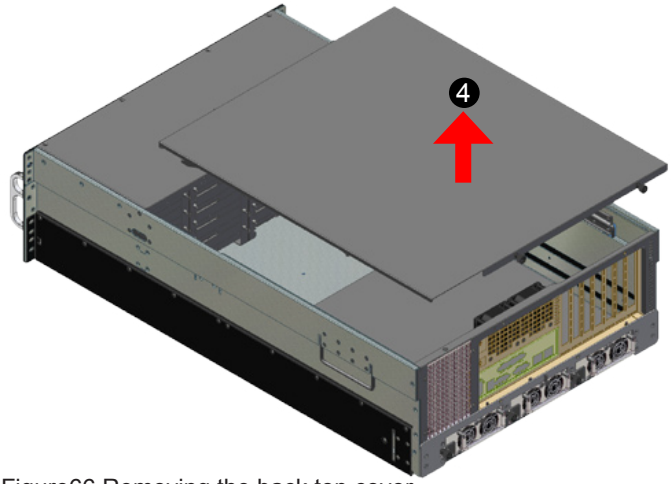


Figure66 Removing the back top cover

#6-32 FH screws (order #09-1002-01A)

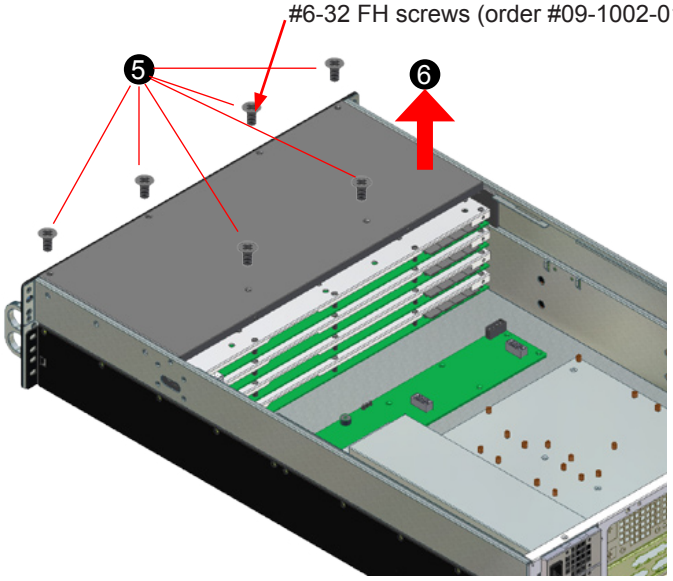


Figure 67 Removing the front top cover

3.1.1 Removing the top cover

1. Ensure that the work surface is flat and clean to prevent scratching the computer cover
2. Loosen the two thumbscrews that secure the back cover to the chassis. If the thumbscrew is too tight, use the Philip-head screw drivers to untighten it as shwon in figure xxx
3. Slide the back cover backward and grasp the cover at both ends.
4. Remove the back cover and put it aside and away from the immediate working area as shwon on figure xxx
5. Untigthen six flat head #6-32 6mm screws of the front cover as shown on the figure.
6. Pull the front cover up and put it aside and away from the immediate working area
7. Pull the front cover up and put it aside and away from the immediate working area

3.1.2 Replacing the top cover

1. Ensure that no tools or parts are left inside the system and that any cables are routed so that they will not be damaged by the cover.
2. Reserve steps of section 3.1.1

3.2 Installing the System Board

Before you perform this procedure, read the safety instructions of this manuel

See safety instructions in your System Board Information document.

Make sure the bolt standoffs install on the right position. Failure to do so may damage the system board installed

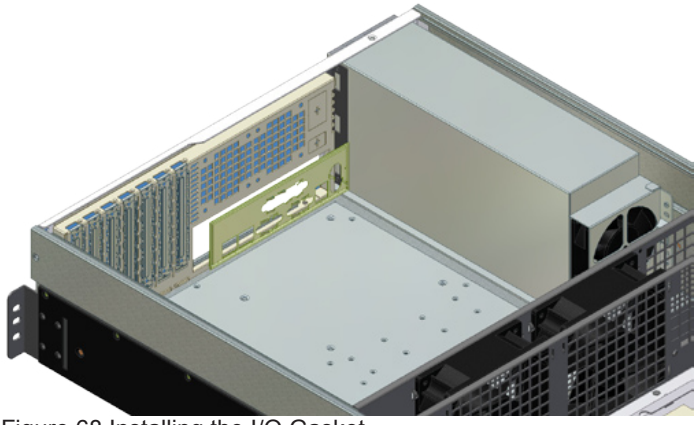


Figure 68 Installing the I/O Gasket

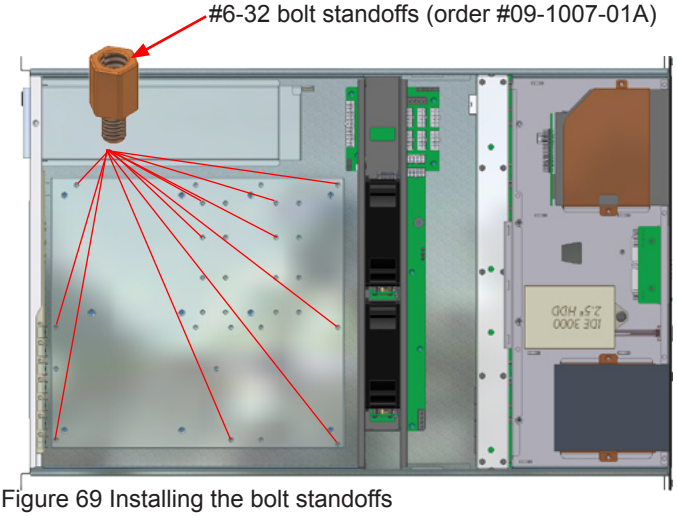


Figure 69 Installing the bolt standoffs

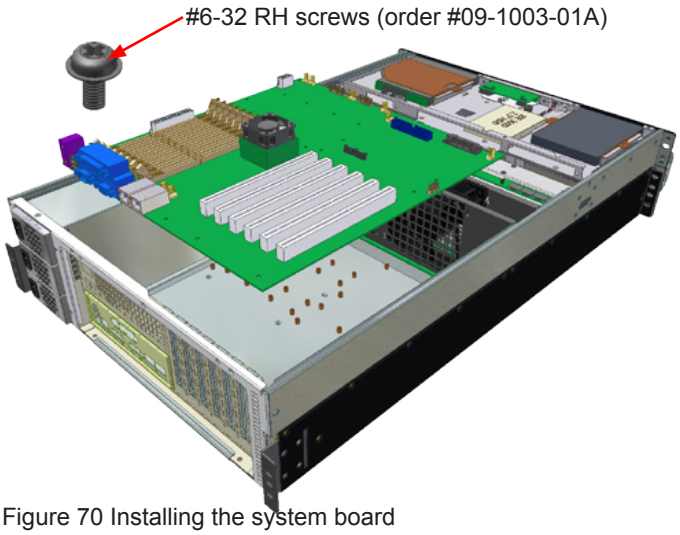


Figure 70 Installing the system board

1. Remove the top cover (see section 3.1.1)
2. Install the I/O gasket (I/O shield) comes with the server board, position one edge so the groove is outside the backpanel wall and push it to the I/O opening until it is seated. Make sure it snaps into place all the way round (Refer to your System Board information document for futher instruction)
3. Check with your server board mounting holes' location. Install the #6-32 bolt standoffs according to your system board mounting location. The #6-32 bolt standoffs are located in accessories box.
4. With the standoffs installed into the correct locations, carefully place the system board into the chassis and ensure the board I/O insert into the I/O gasket cutout
5. Tigthen and secure the system board with the round head #6-32 screw from the accessories box.
6. Install the Front Panel cable, Power Supply cable, and other device connectors to the system board. (Refer to your System Board information document for futher instruction)
7. Close the top cover (see section 3.1.2)

3.3 Installing Expandsion Cards

Before you perform this procedure, read the safety instructions of this manuel

See safety instructions in your Add-in-Cards Information document.

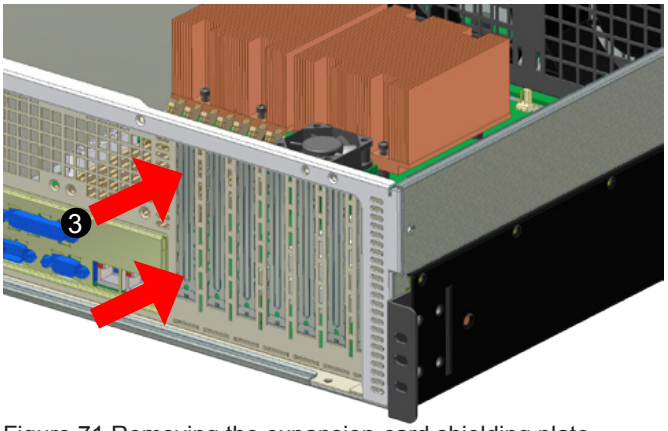


Figure 71 Removing the expansion-card shielding plate

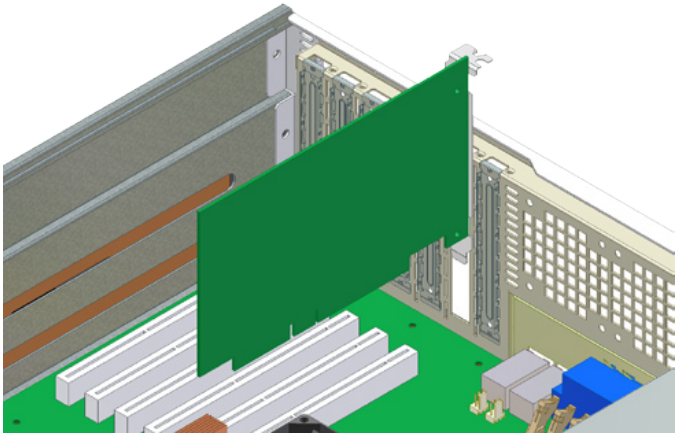


Figure72 Installing the expansion-card into the system

#6-32 RH screws (order #09-1003-01A)

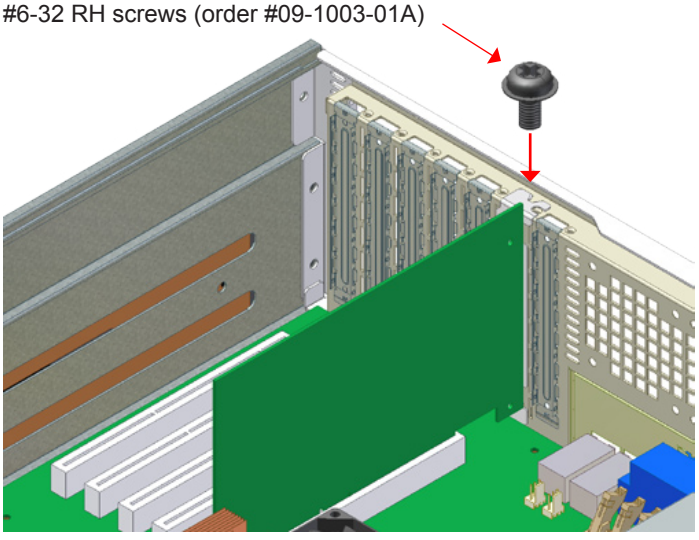


Figure 73 Secure the expansion-card

1. Upack the expansion card and prepare it for installation. For instructions, see the documentation accomplying the card.
2. Remove the top cover (see section 3.1.1) Disconnect cables of the system if necessary
3. Remove the expansion-card shielding plate by pushing it toward the chassis. Put it into the accessories box for future use.
4. Position the expansion-card so that the card-edge connector from the system board aligns with the expansion-card connector

   Insert the card-edge connector firmly into the expansion-card connector until the card is fully seated.
5. Tigthen and secure the expansion-card with the round head #6-32 screw from the accessories box or from the package of the expansion-card
6. Reconnect the expansion-card cables, including those for the new card
7. Close the top cover (see section 3.1.2)

3.4 Install and Remove a Hard Disk Drive

Before you perform this procedure, read the safety instructions of this manuel

NOTICE: Extra care must be taken when handling and storing the hard drives. The carriers provide some protection, but the hard drives can be damaged by rough handling. When removing the hard drives from the storage system, place them on a padded surface. Never drop the hard drives.

NOTICE: To avoid damage, never leave a drive carrier partially removed from the ESR storage system. Rotating a carrier handle next to an unseated drive carrier will result in serious damage to the unseated drive carrier.

NOTICE: To avoid data loss when removing a hard drive from an active RAID array, you must first use the array management software to prepare the drive for removal. See your array management software documentation for more information.

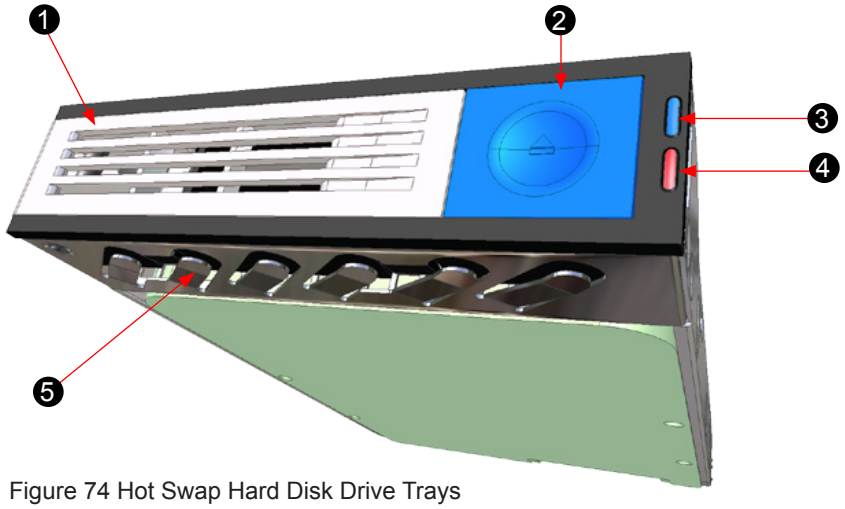
NOTICE: Always wear a wrist grounding strap when handling equipment with static-sensitive components.

NOTICE: Hard drive bays must be populated in order to maintain system thermals. Hard drive trays must either have a hard drive or drive dummy blank installed in them.

3.4.1 Hot Swap Hard Disk Drive Trays (order # 03-1007-01A)

All the system configured with the ESR series storage chassis configure with hot swap backplane, each hard drive must be mounted to a hot swap drive tray, making insertion and extraction of the drive from the chassis very simple. Each drive tray has its own dual purpose latching mechanism made of high quality aluminum alloy which is used to both insert/extract drives from the chassis and lock the tray in place. Each drive tray supports a pair of light pipe providing drive status/activity and drive failed indicator, located on the backplane, to be viewable from the front of the chassis

NOTICE: Depending on the controller used, SATA hard disk drives may not report errors using the drive's status indicator. Visit www.enlightusa.com for compatibile SATA controller list that support drive's status indicator.



1. High quality aluminum alloy latching handle
2. Push in release mechanism
3. Blue color light pipe
4. Red Color light pipe
5. EMI fingers

Figure 74 Hot Swap Hard Disk Drive Trays

Front Panel Button and LED functions

❶	Aluminum Handle	To insert/extract drives from the chassis and lock the tray in place
❷	Release Button	To release the aluminum handle from the locking position
❸	Blue Color Light Pipe	No light indicates no hard drive in that tray Solid blue light indicates the hard drive is present Blinking blue light indicates the hard disk drive has activity
❹	Red Color Light Pipe	Solid red light indicates the hard drive failed in that tray
❺	EMI fingers	To reduce EMI/EMC emission from the chassis

3.4.2 Before You Begin

Before attempting to remove or install a drive while the system is running, see the documentation for the RAID controller card ensure that the system is configured correctly to support hot-pluggable drive removal and insertion.

3.4.3 Removing a Hard Disk Drive

Figure 75 Push the Hard Dirve tray button

❶ Use your array management software to prepare the drive for removal.

❷ Wait until the LED indicators on the drive carrier stop flashing.

❸ Push the button in the front of the hard-drive carrier as shown

❹ Open the hard-drive carrier handle.

❺ Gently but firmly pull the hard-drive carrier from its slot.

Figure 76 Remove the HDD tray from the chassis

3.4.4 Installing or removing a Hard Disk Drive from its Carrier

NOTICE: To avoid damage, never leave a drive carrier partially removed from the ESR storage system. Rotating a carrier handle next to an unseated drive carrier will result in serious damage to the unseated drive carrier.

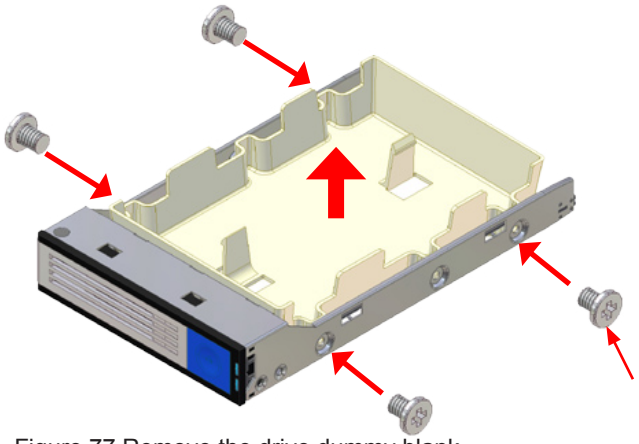


Figure 77 Remove the drive dummy blank

❶ Remove the hard drvie tray from the system (see section 3.4.3)

❷ Remove the hard drive dummy blank from the carrier by remove the four Pan Head screws (order #09-1009-01A) that secure the drive dummy blank

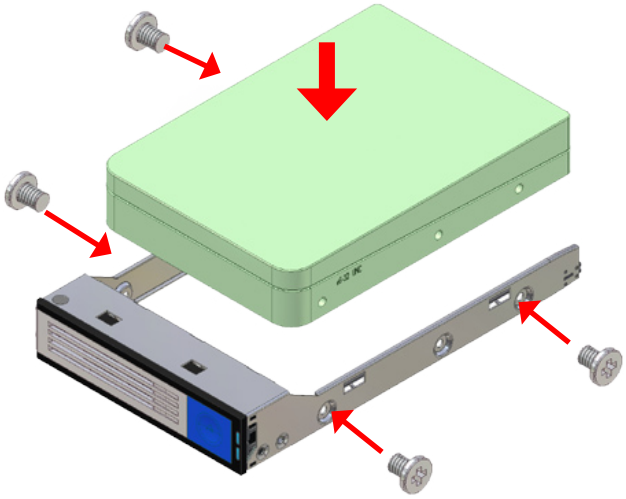


Figure 78 Install the Hard Disk Drive into the carrier

❸ Remove the drive dummy blank from the carrier and put it aside for future use

❹ Insert the replacement hard disk drive into the carrier

❺ Insert the four Pan Head screws and secure the hard disk drive to the carrier

❻ Gentlly insert the hard disk tray into the drive bay

❼ Close the alunimum handle to lock it in place

Figure 79 Insert the hard disk drive tray to the system

3.5 Installing or removing a Slim IDE Hard Disk Drive

All the system configured with the ESR series storage chassis can support up to 3 slim-line 2.5” IDE hard drive. Refer section 2.8.4, section 2.10.2 and section 2.10.3 for cable selection guide. The location refer to the drive number is shown on the figure below.

Before you perform this procedure, read the safety instructions of this manuel

NOTICE: Extra care must be taken when handling and storing the hard drives. Hard drives can be damaged by rough handling. When removing the hard drives from the storage system, place them on a padded surface. Never drop the hard drives.

Connecting the adapter to the drive incorrectly can serverly damage or destroy your hard disk drive. The location of PIN 1 on the hard drive depends on the model of hard drive you are using, If you are unsure of the location of PIN 1 on your hard drive, contact the hard disk drive manufacturer before attempting to connect the drive.

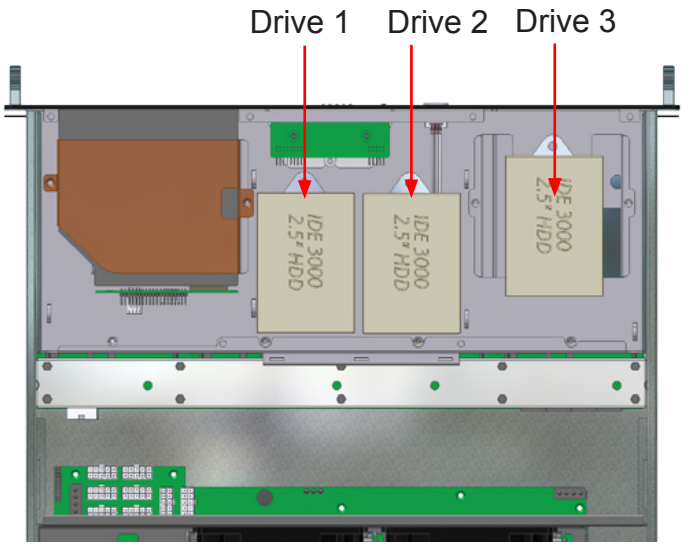


Figure 80 2.5” slimline hard disk drive location

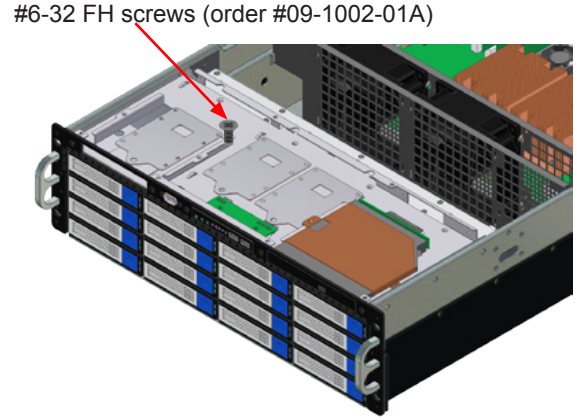


Figure 81 Remove the slim-line HDD mounting bracket

1. Unpack the 2.5” slim-line hard disk drive and prepare it for installation. For instructions, see the documentation accomplying the hard drive
2. Remove the top cover (see section 3.1.1) Disconnect cables of the system if necessary
3. Remove the slim-line hard drvie tray (order #06-0115-01A) from the system by removing the #6-32 FH screws (order # 09-1002-01A).

NOTICE: If you need to install the HDD on Drive 3 location, you need to remove the FDD adapter board first, refer section 3.6 for instruction

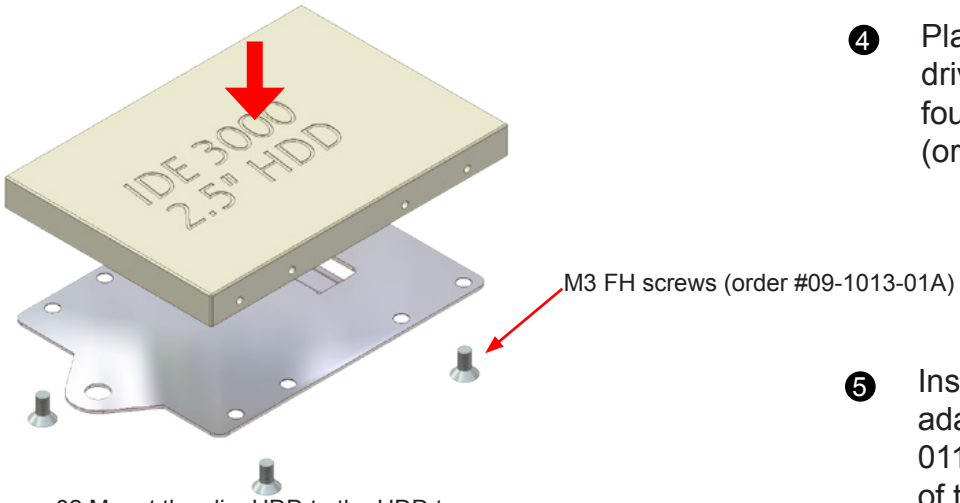


Figure 82 Mount the slim HDD to the HDD tray

❹ Place and aligh the slim-line hard drive to its tray and mount it with four M3 screws as shown (order # 09-1013-01A)

❺ Install the 2.5” to 3.5” Slim IDE adapter into the system (order #16-0118-01A). Make sure the PIN 1 of the adapter match PIN 1 of the slim-line hard drive

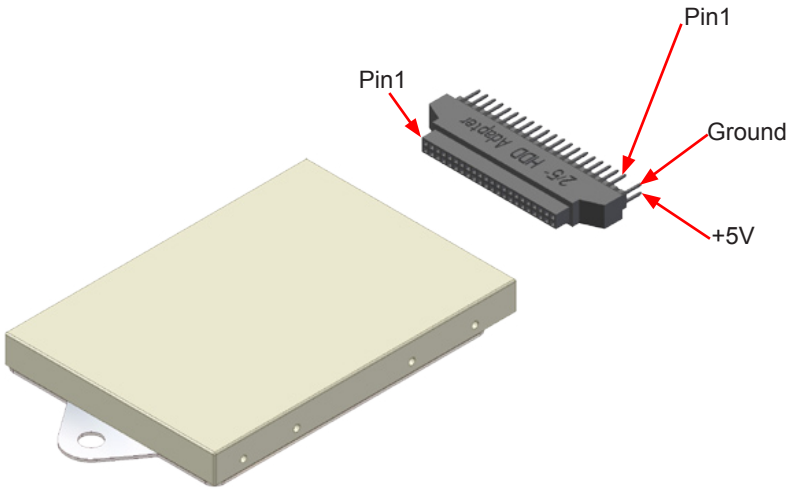


Figure 83 Install the 2.5” to 3.5” IDE adapter

❻ Reserve step to install the hard disk drive back to the chassis.

❼ Connect the 40pin IDE cable and 2 pin power cable. Refer section 2.8 and section 2.10

❽ Make sure no tools or parts are left in the chassis and close the top cover (section 3.1.2)

3.5.1 Configure 2.5” Slim Hard Disk Drive Master and Slave Drive

NOTICE: See your 2.5” slim hard drive documentation for Master and Slave configuration. The sample jumper setting shown below is for your reference only.

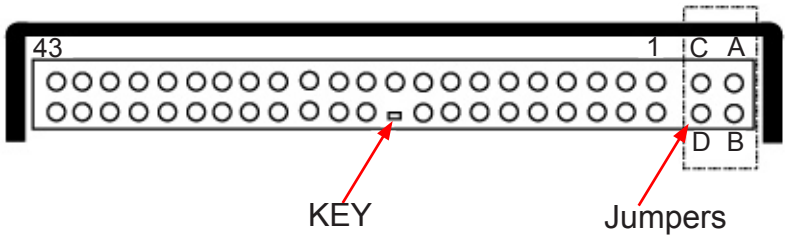


Figure 84 Example jumper setting for 2.5” IDE hard disk drive

Master configuration is obtained by setting jumpers B, C & D open (no jumper). Slave configuration is obtained by setting jumpers C-D.

BLANK

3.6 Installing a Slim Floppy Disk Drive

Before you perform this procedure, read the safety instructions of this manuel

3.6.1 Installing a Slim Floppy Disk Drive

All the system configured with the ESR series storage chassis can support slim-line Floppy Disk Drive. Refer section 2.9 for adapter and cable information. The slim FDD adapter and 34 pin FDD cable may have already been preinstalled in the system

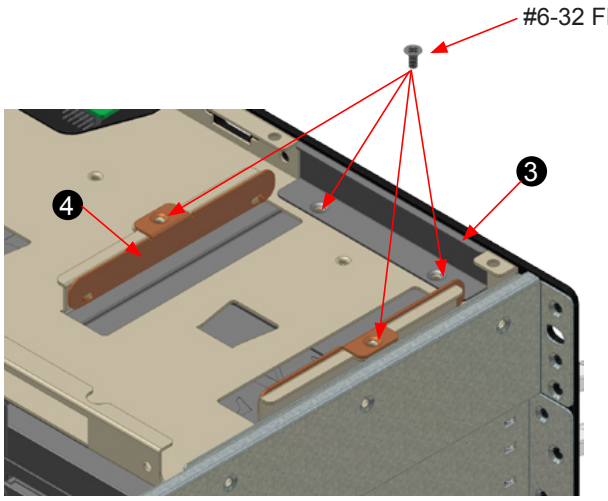


Figure 85 Remove the FDD cover plate and mounting bracket

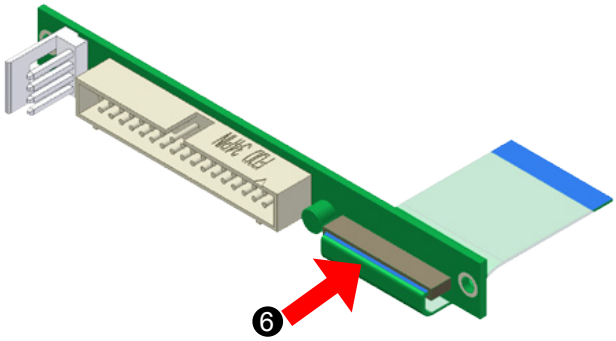


Figure 86 Connect 26-pin cable into the FDD adapter board

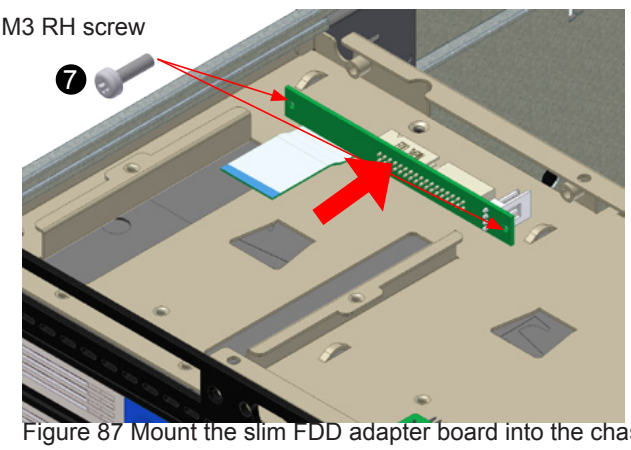


Figure 87 Mount the slim FDD adapter board into the chassis

1. Unpack the slim-line floppy disk drive and prepare it for installation. For instructions, see the documentation accomplying the floppy drive
2. Remove the top cover (see section 3.1.1) Disconnect cables of the system if necessary
3. Remove the FDD cover plate (order # 06-0110-01A)by unscrew the two #6-32 FH screws (order # 09-1002-01A) as shown
4. Remove the slim FDD mounting rail by untighten the two #6-32 FH screws (order # 09-1002-01A) as shwon
5. Put the slim FDD cover plate and the screws in the accessories box
6. Connect the high density 26 pin flat cable into the slim-line FDD adapter board with the orientation as shown.
7. Install the slim-line FDD adapter board into the chassis as shown with the two M3 Round Head screws (order #09-1012-01A that come with the

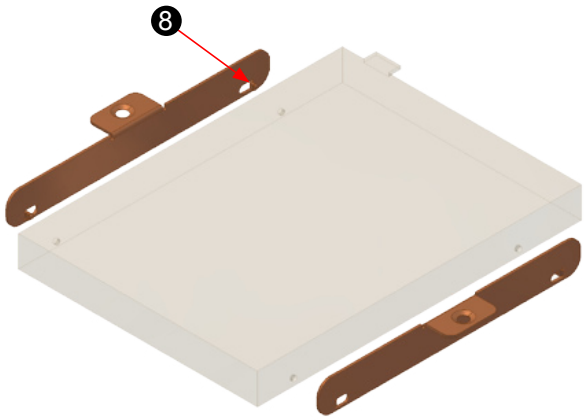


Figure 88 Assembly the FDD into the mounting bracket

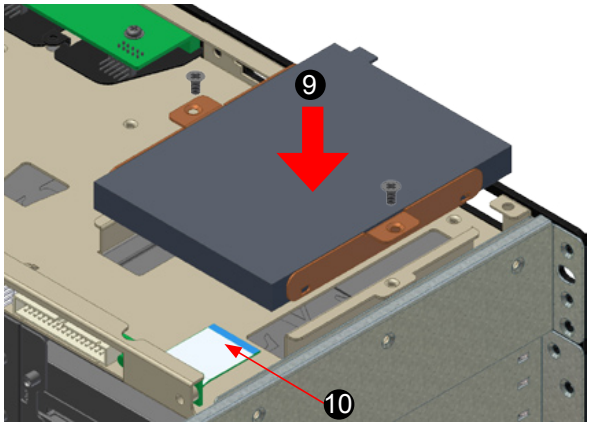


Figure 89 Install the slimline FDD into the chassis

❽ Snap in the slim FDD mounting rail latch fingers into the slim FDD mounting holes as shown

❾ Carefully put the assemblied slim FDD with rail back into the chassis and secure it with the two FH screws

❿ Connect the high density 26 pin flat cable into the slim FDD drive and push in the placement latch to secure the drive

- Ⓐ Open the connector on the rear of the FDD by pulling up on the connector cover
- Ⓑ Insert one end of the 26 pin flat cable end into the connector
- Ⓒ Push down on the connector cover to lock the cable down into place.

⓫ Install the 34 pin FDD cable (order #17-1004-01A) from the slim FDD adapter board and the mini 4 pin cable (order # 17-1018-01A)

⓬ Make sure no tools or parts are left in the chassis and close the top cover (section 3.1.2)

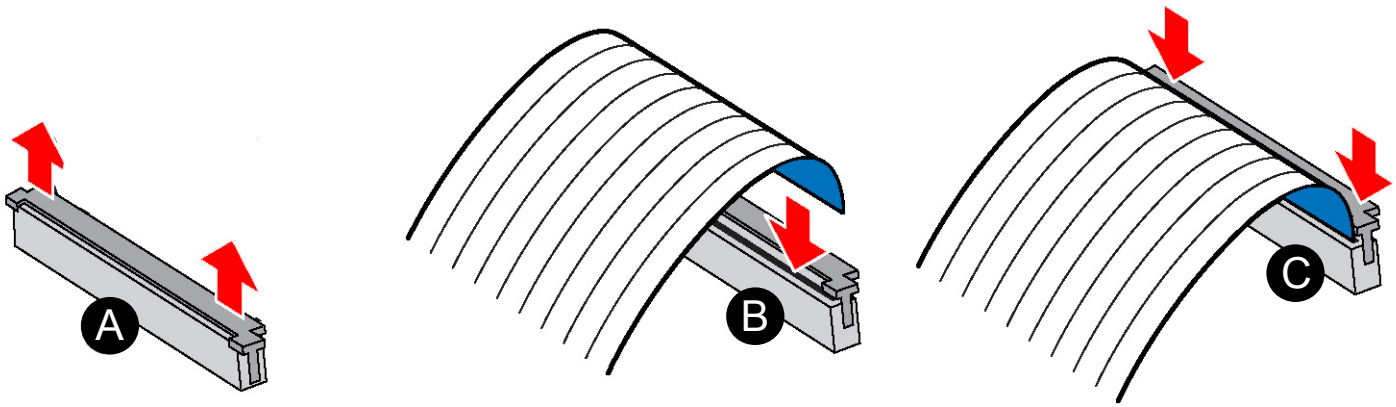


Figure 90 Connect the 26-pin high density cable into the slimline FDD

3.7 Installing a Slim CD/DVD-Rom Drive

Before you perform this procedure, read the safety instructions of this manuel

All the system configured with the ESR series storage chassis can support slim-line CD/DVD-Rom Drive. Refer section 2.10 for adapter and cable information.

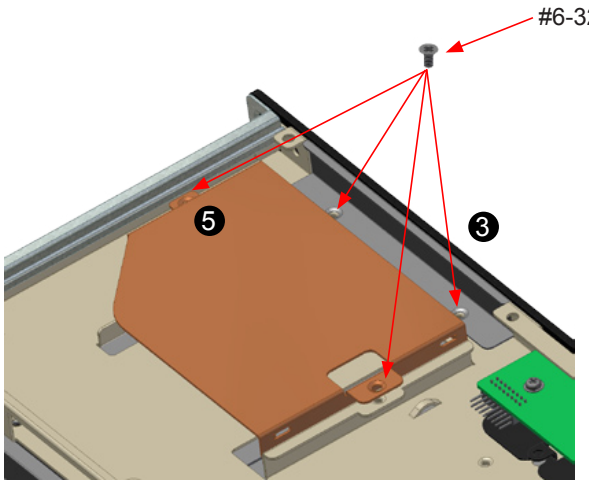


Figure 91 Remove the CD-Rom covering plate and mounting bracket

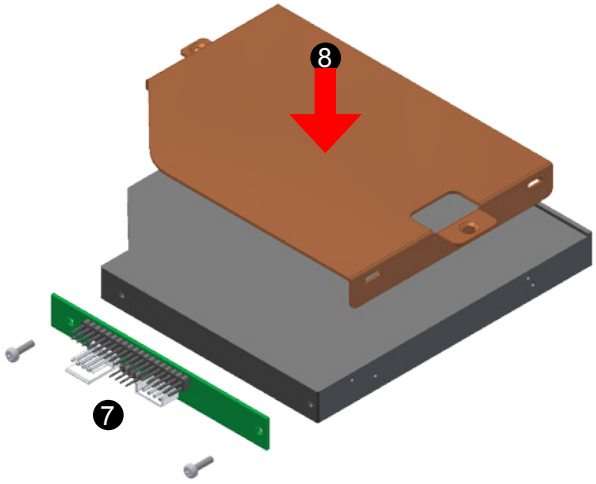


Figure 92 Install the slim-line CD-Rom into the mounting bracket and adapter board

1. Upack the slim CD/DVD-Rom drive and prepare it for installation. For instructions, see the documentation accomplying the floppy drive
2. Remove the top cover (see section 3.1.1) Disconnect cables of the system if necessary
3. Remove the CD/DVD-Rom cover plate (order # 06-0112-01A)by unscrew the two #6-32 FH screws (order # 09-1002-01A) as shown
4. Put the slim CD/DVD-Rom cover plate and the screws in the accessories box
5. Remove the slim CD/DVD-Rom mounting bracket by untighten the two #6-32 FH screws (order # 09-1002-01A) as shwon
6. Take out the slim CD/DVD-Rom adapter board (order # 16-0105-01A) from the accessories box. Connect the adapter board to the slim CD/DVD-Rom drive.
7. Secure the adapter board to the slim CD/DVD-Rom drive by the two screws provided.
8. Insert the slim CD/DVD-Rom drive into the mounting bracket and snap in the fingers into the slim CD/DVD-Rom mounting holes

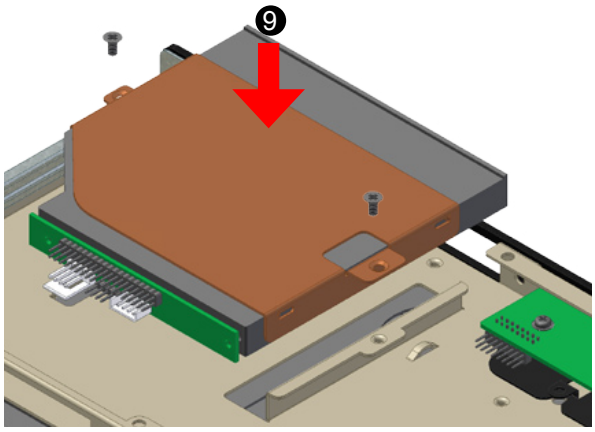


Figure 93 Install the slim CD-Rom into the chassis

❾ Carefully put the assemblied slim CD/DVD-Rom drive back into the chassis and secure it with the two FH screws

❿ Connect the 40pin IDE cable (order # 17-1003-01A) to the adapter board and connect the slim power board mini 4 pin connector to the adater board

⓫ Make sure no tools or parts are left in the chassis and close the top cover (section 3.1.2)

3.8 Installing the Rear Panel Fan

Before you perform this procedure, read the safety instructions of this manuel

All the system configured with the ESR series storage chassis can put in two additional rear fan. The size of the rear fans is 60mm (WxH) x 38mm (D) (order # 18-1004-01A)

Fan Guide must be installed in the fan. The fan blade will cut your fingers if it is not installed.

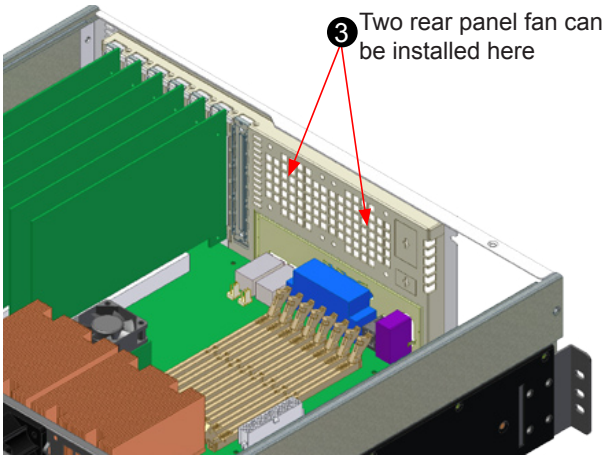


Figure 94 Location of the rear exhaust fans

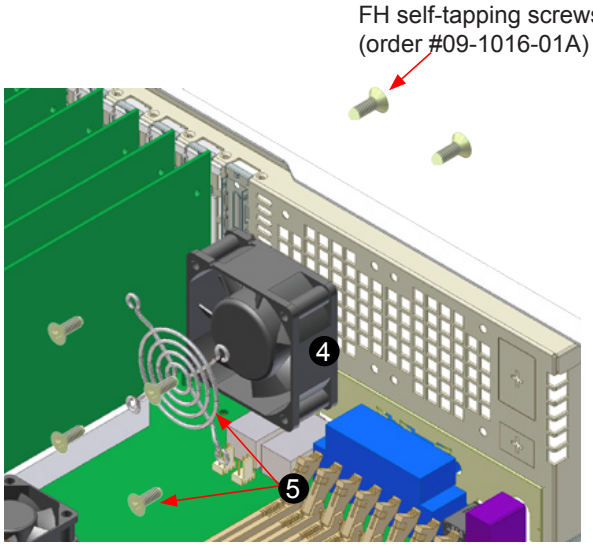


Figure 95 Install the rear fan into the chassis

1. Upen the rear fan from its package.
2. Remove the top cover (see section 3.1.1)
3. Put the fan into the rear panel fan mounting area as shwon
4. Install the fan into the rear panel by four flat head self-tapping screws (order # 09-1016-01A) as shown
5. If the fan guide has not installed in your rear panel fan, use four flat head self-tapping screws (order # 09-1016-01A) to secure it into the fan as shown.
6. Connect the 3pin fan cable to the system fan header. See the documentation of the system board.
7. Make sure no tools or parts are left in the chassis and close the top cover (section 3.1.2)

3.9 Replacing the Hot-Swap System Fan

Before you perform this procedure, read the safety instructions of this manuel

All the system configured with the ESR series storage chassis can provide with two 120mm long life high quality ball-bearing fan. If the fan failed, the monitor of the System Board will detect the failed signal that will trigger the alarm and fan failed LED on the front panel. The fan failed siganl be feedback to the system board through the front panel I/O cable (order #17-1014-01A) SMB header or through the PWM fan signal cable (order # 17-1015-01A) See section 2.2.5

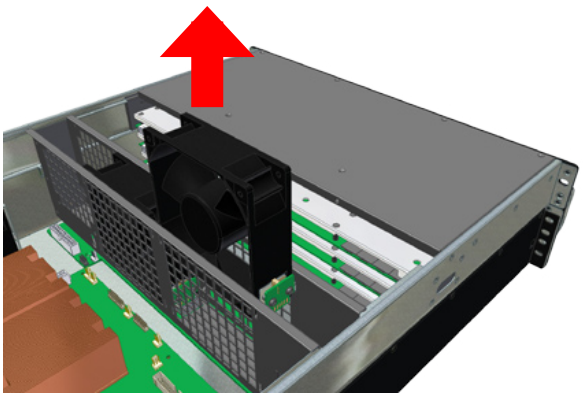


Figure 96 Pulling out the hot-swap system fan

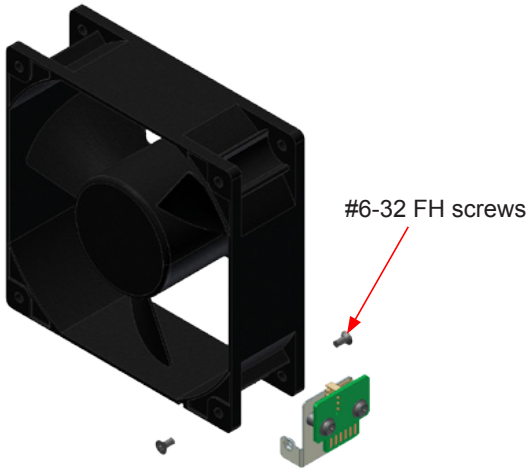


Figure 97 Install the fan into the fan edge board

1. Upen the rear fan from its package.
2. Remove the top cover (see section 3.1.1)
3. Identify the failed fan from the system and pull out the defected fan as shwon.
4. Remove the 3 pin fan connector (4 pin for PWM fan) from the fan edge board (order #16-0106-01A) See section 2.13
5. Remove the fan edge board assembly by taking the two mounting screws (order #09-1002-01A) as shown
6. Install the new fan into the edge board assembly and reserve the step above to install it back to the system
7. Make sure no tools or parts are left in the chassis and close the top cover (section 3.1.2)

NOTICE: After installing a new fan, allow several seconds for the system to recognize the fan and determine whether it is working properly. The fan failed indicator and alarm will turn off to signify that the fan is functioning properly. Refer section 1.3 for indicator functions.

3.10 Replacing the Hot-Swap Power Supply Modular

Before you perform this procedure, read the safety instructions of this manuel

The only way to disconnect power completely is to unplug the power cord

When connecting or disconnecting a cable, always hold the cable by its connector, the plug, not the cord

Never force a connector into a port. If the connector and port do not join with reasonable ease, they probably don't match.

Never open the power supply modular for any reason.

NOTICE: The power supplies are hot-pluggable. The system requires two (three for the 1350W model) power supply modulars to be installed for the system to operate normally. The system is in the redundant mode when all power supplies are installed. Remove and replace only one power supply at a time in a system that is powered on.

3.10.1 Replacing the 650W 2+1 Hot-Swap Power Supply Modular (order #)

The ESR-316 chassis uses 650W 2+1 redundant power supply, follow the instruction below for procedures to replacing the power supply modular.

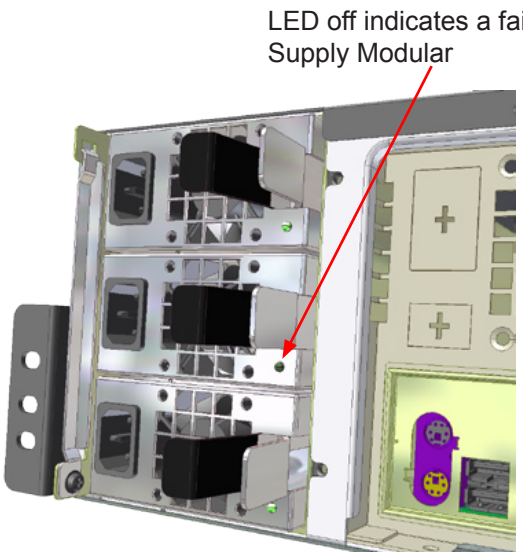


Figure 98 Identify the defected power supply modular

❶ Remove the packaging from the new power supply modular and set it near the back of the system

❷ Locate the power supply modular need to be replaced, by examining the individual LED on the back of the power supply modular as shown, if LED without light, it indicates this modular is defective and need to be replaced.

❸ Unplug the AC power cord from the power supply modular you want to replace

Please perform the above step carefully, replacing a non-defective power supply modular may casue shut down the whole system.

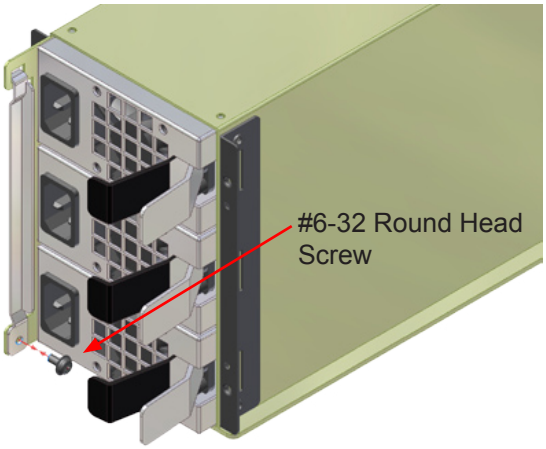


Figure 99 Remove the screw that secure the 650W PSU

❹ Unscrew the #6-32 round head screw on the displacement bar that secure the power supply modular as shown

Figure 100 Remove the displacement bar of the 650W PSU

❺ Remove the displacement bar from the power supply and put it aside.

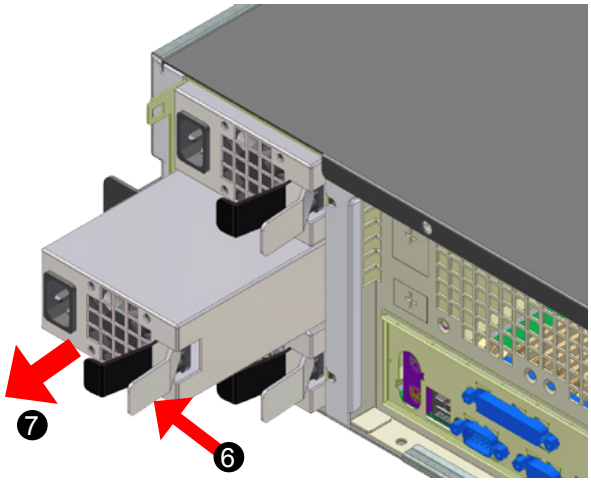


Figure 101 Pull out the PSU modular from its housing

❻ Squeeze the latch at the right side of the power-supply handle as shown to release the latch locking mechanism

❼ Pull the power supply modular straight out to clear the chassis

The temperatue on the surface of the power supply modular maybe around 120F to 140F depends on your environmental temperature, wear glove to protect you from burning.

DO NOT reach inside the system when removing a power supply or when the unit is out of the system

❽ Hold the new power supply modular by two hands and carefully slide it into the system until it clicks into the place.

❾ Reserve STEP 5 and STEP 4 to secure the power supply modular into the system .

❿ Attach the power cord to the back of the new power supply and to the power source.

⓫ Check the LED which indicates the new power supply modular and it should lit green

NOTICE: After installing a new power supply, allow several seconds for the system to recognize the power supply and determine whether it is working properly. The power- on indicator will turn green to signify that the power supply is functioning properly Refer section 1.3 for indicator functions.

3.10.2 Replacing the 930W 2+1 Hot-Swap Power Supply Modular (order #)

The ESR-420 and ESR-524 chassis uses 930W 2+1 redundant power supply, follow the instruction below for procedures to replacing the power supply modular.

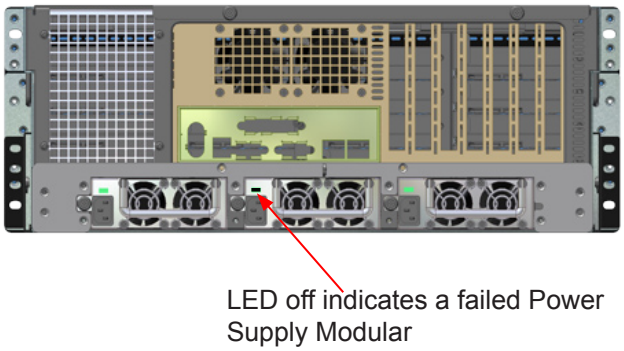


Figure 102 Identify the defected PSU unit

❶ Remove the packaging from the new power supply modular and set it near the back of the system

❷ Locate the power supply modular need to be replaced, by examining the individual LED on the back of the power supply modular as shown, if LED without light, it indicates this modular is defective and need to be replaced.

❸ Unplug the AC power cord from the power supply modular you want to replace

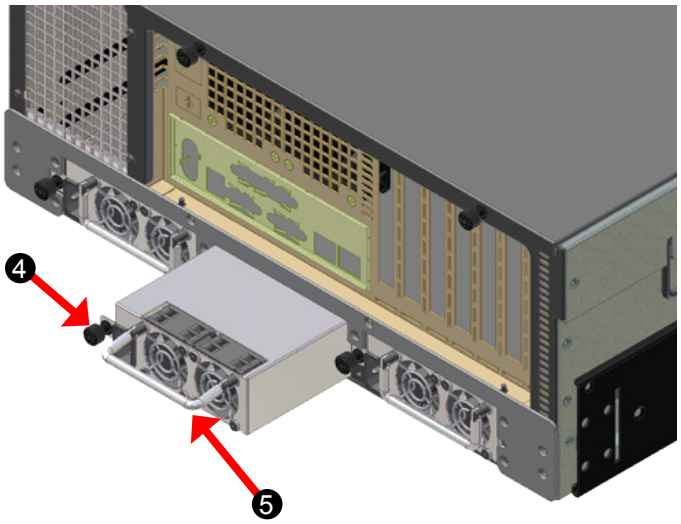


Figure 102 Install the 2.5” to 3.5” IDE adapter

❹ Unscrew the thumb screw of the defected power supply modular

❺ Rotate the power-supply handle up and pull the power supply modular straight out from the chassis

The temperatue on the surface of the power supply modular maybe around 120F to 140F depends on your environmental temperature, wear glove to protect you from burning.

DO NOT reach inside the system when removing a power supply or when the unit is out of the system

❻ Hold the new power supply modular by two hands and carefully slide it into the system until it clicks into the place.

❼ Reserve STEP 5 and STEP 4 to secure the power supply modular into the system .

❽ Attach the power cord to the back of the new power supply and to the power source.

❾ Check the LED which indicates the new power supply modular and it should lit green

NOTICE: After installing a new power supply, allow several seconds for the system to recognize the power supply and determine whether it is working properly. The power- on indicator will turn green to signify that the power supply is functioning properly Refer section 1.3 for indicator functions.

3.10.3 Replacing the 1350W 3+1 Hot-Swap Power Supply Modular (order #)

The ESR-524 chassis uses 1350W 3+1 redundant power supply, follow the instruction below for procedures to replacing the power supply modular.

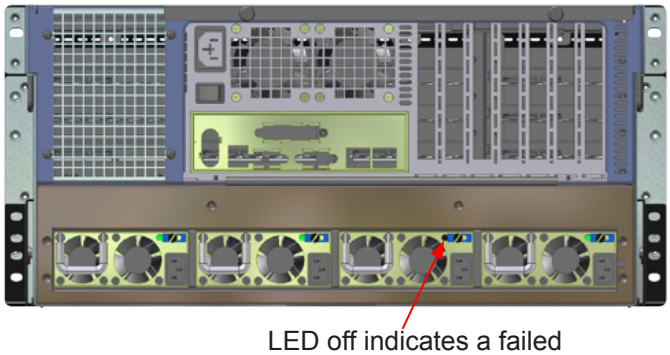


Figure 104 Identify the failed PSU modular

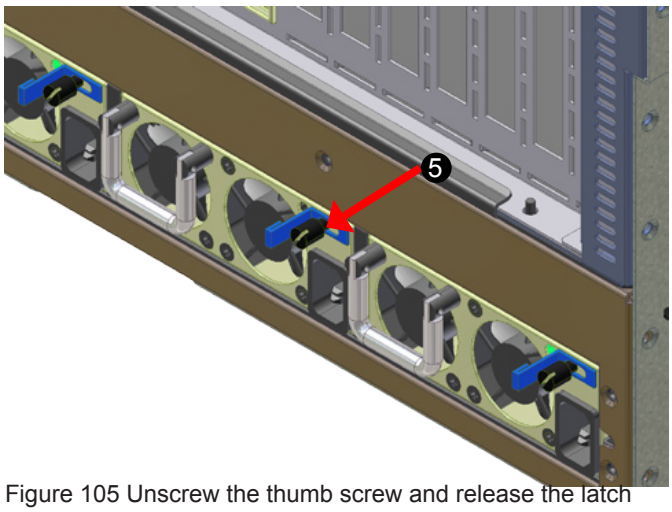


Figure 105 Unscrew the thumb screw and release the latch

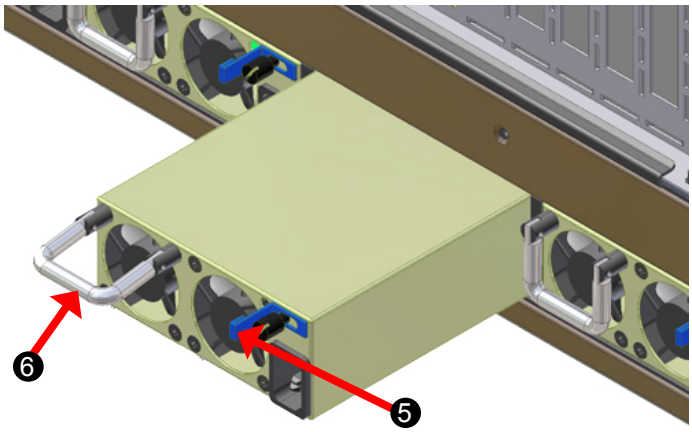


Figure 106 Pull out the modular form the housing

❶ Remove the packaging from the new power supply modular and set it near the back of the system

❷ Locate the power supply modular need to be replaced, by examining the individual LED on the back of the power supply modular as shown, if LED without light, it indicates this modular is defective and need to be replaced.

❸ Unplug the AC power cord from the power supply modular you want to replace

❹ Unscrew the thumb screw of the defected power supply modular

❺ Push in the latch locate next to the thumb scew to release the latch locking mechanism

❻ While holding the latch, rotate the power supply handle up until the power supply modular is released from the chassis

The temperatue on the surface of the power supply modular maybe around 120F to 140F depends on your environmental temperature, wear glove to protect you from burning.

DO NOT reach inside the system when removing a power supply or when the unit is out of the system

❼ Hold the new power supply modular by two hands and carefully slide it into the system until it clicks into the place.

❽ Reserve STEP 5 and STEP 4 to secure the power supply modular into the system .

❾ Attach the power cord to the back of the new power supply and to the power source.

❿ Check the LED which indicates the new power supply modular and it should lit green

NOTICE: After installing a new power supply, allow several seconds for the system to recognize the power supply and determine whether it is working properly. The power- on indicator will turn green to signify that the power supply is functioning properly Refer section 1.3 for indicator functions.

3.11 Replacing the Backplane Board

Before you perform this procedure, read the safety instructions of this manuel

When connecting or disconnecting a cable, always hold the cable by its connector, the plug, not the cord

Never force a connector into a port. If the connector and port do not join with reasonable ease, they probably don't match.

The ESR-series storage chassis support many different types of backplane boards, please refer section 2.3 to section 2.5 for backplane options. The ESR-series chassis offer easy installation and removal of the backplane boards The following section will show the instructions for replacing the backplane board.

NOTICE: Extra care must be taken when handling and storing the backplane boards. The backplane board components can be damaged by rough handling. When removing the backplane boards from the storage system, place them on a padded surface. Never drop the backplane boards

NOTICE: Always wear a wrist grounding strap when handling equipment with static-sensitive components.

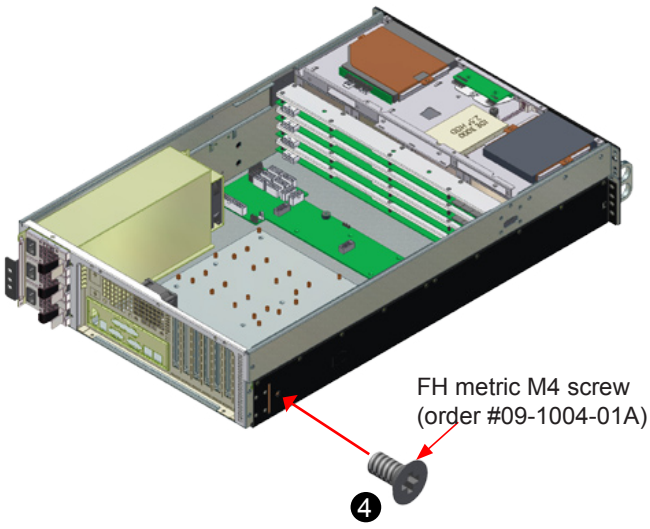


Figure 107 Remove the slide rail security screws

1. Turn off the system and unplug of the power cables,
2. Remove the top cover (see section 3.1.1)
3. Unplug the AC power cord from the power supply modular you want to replace
4. Remove the flat head M4 screws (order # 09-1004-01A) from both side of the chassis security the slide rail set as shown.

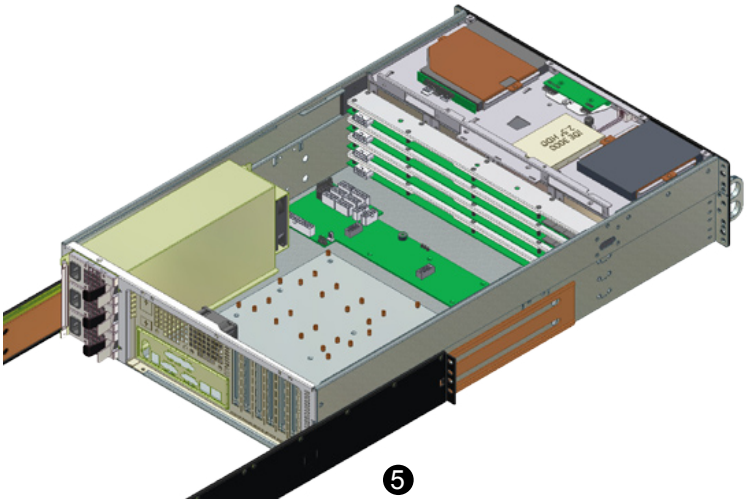


Figure 108 Fully extend the slide rail

❺ Fully extend the slide rail set as shown, you will see mounting screws on the two sides of the chassis that support the back-plane mounting bracket.

❻ Unplug all the cables attached to the backplane boards.

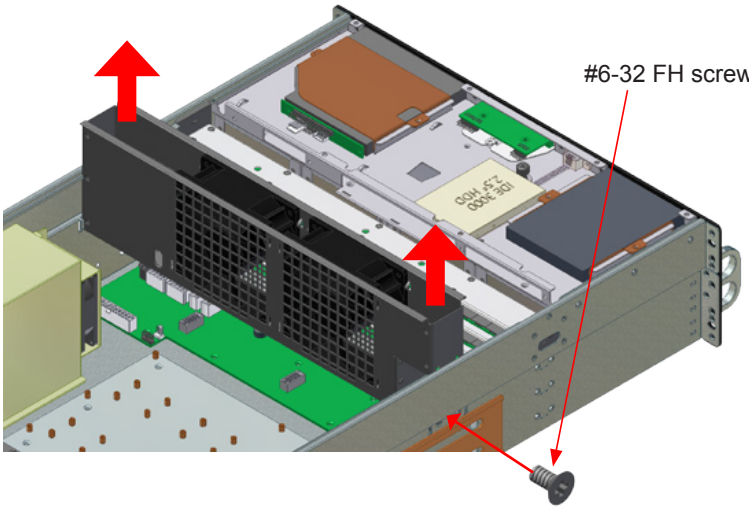


Figure 109 Remove the system fan mounting bracket

❼ Remove the system fan mounting bracket by unscrewing the two FP #6-32 screws on both sides of the chassis as shown. Carefully life up the system fan mounting bracket

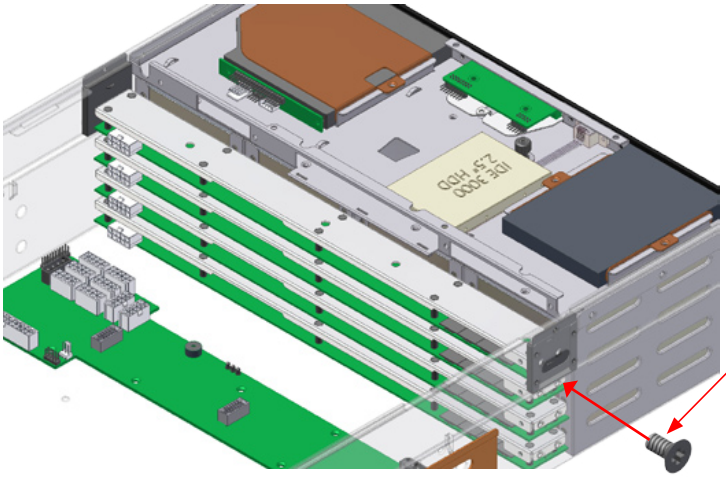


Figure 110 Remove the backplane bracket mounting screws

❽ Remove the two FP #6-32 screws on both sides of the chassis on the back-plane mounting brackets you want to replace as shown.

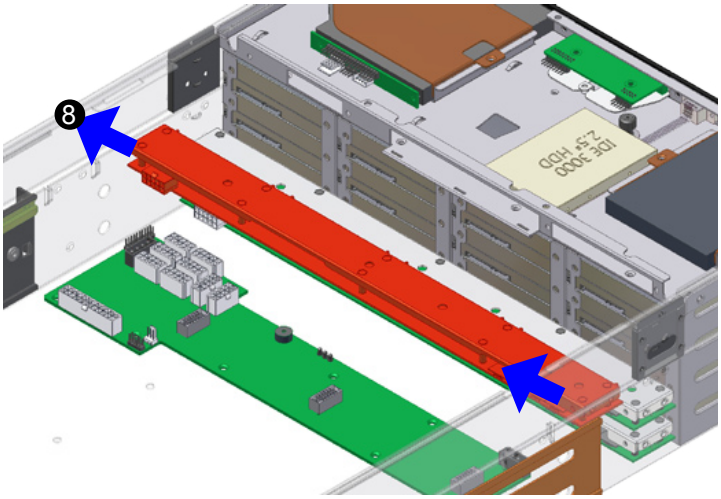


Figure 111 Install the 2.5” to 3.5” IDE adapter

❾ After the mounting screws removed, carefully slide out the backplane mounting backet, which has been highlighted in red as shown in the figure.

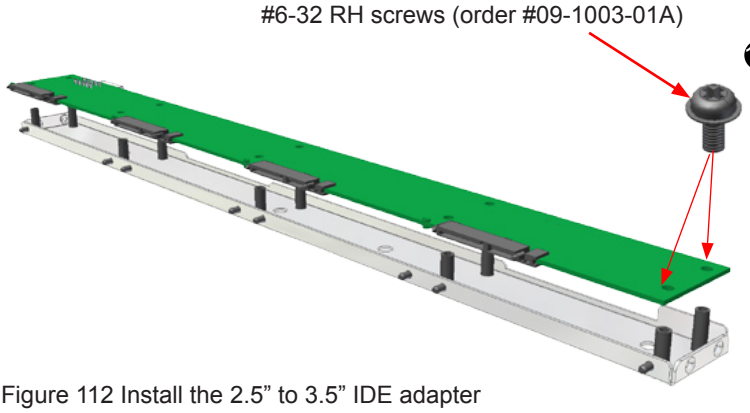


Figure 112 Install the 2.5” to 3.5” IDE adapter

❿ Remove the ten RH #6-32 mounting screws on the backplane board and remove the backplane board away from the backplane mounting bracket.

⓫ Install the new backplane board by reserve all the step above.

3.12 Replacing the system battery

Before you perform this procedure, read the safety instructions of this manuel

The purpose of this section is for system integrator to sumbit for product safety conformity that may required paper trail instruction on replacing system battery. The system battery maybe in your server board, the storage RAID controller or other device. Consult with the manufacturer docunmentation for futher information.

If your system require special instruction on your operator, installation and service manual that is needed by your product safety testing laboratory, please contact the author by email to sfu@enlightcorp.com

CAUTION: There is a danger of a new battery exploding if it is incorrectly installed. Replace the battery only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.

NOTICE: If you pry the battery out of its socket with a blunt object, be careful not to touch the system board with the object. Ensure that the object is inserted between the battery and the socket before you attempt to pry out the battery. Otherwise, you may damage the system board by prying off the socket or by breaking circuit traces on the system board.

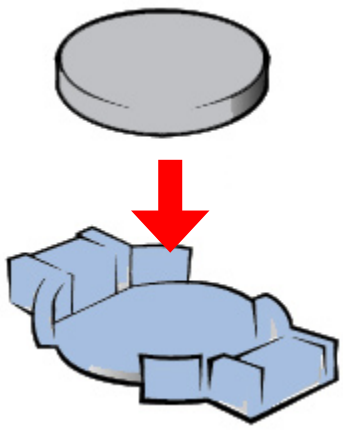


Figure 113 Replace the battery

Open the computer cover

Locate the battery socket from the server board

Remove the battery by carefully prying it out of its socket with your fingers or with a blunt, nonconducting object such as a plastic screwdriver.

Insert the new battery into the socket according to the orientation of the server board user manual, and snap the battery into place.

Battery Disposal

Do not dispose of the battery along with household waste. Contact your local waste disposal agency for the address of the nearest battery deposit site.

4. Install the system into the rack

4.1 Rack Safety Instruction

4.1.1 Precautions for Handling the system

When configured with a full set of drives, power supply and server board, the system weighs will be over 100 pounds. Take the following precautions to avoid problems or potential injury as you handle the ESR-series storage chassis

Do not unpack, life or carry the system by yourself. Always have another person available to help you move or lift the system

Prepare a flat, sturdy surface before taking out the chassis, the working surface that will hold the chassis should be as close as possible to the package

Both people should follow these steps to life or move the chassis

Stand with your legs shoulder-width apart to maintain balance

Bend on your hips and knees, not at your waist

Use your leg muscles to life

Life with a smooth motion

Kepp the chassis close to your boday and at waist level to lessen the load on your back

To turn while holding the chassis, use your feet, do not twist your back

4.1.2 Precautions for installing the chassis into the Rack Cabient

Ensure proper floor support and ensure the floor loading specification are adhered to. Failure to do so may result fatal injury to you or damage to the equipment and the facility

DO not exceed the weight limit recommended for your rack

DO not install the ESR-series chassis in a two port, or telco-styple rack. These chassis cannot be mounted safety in a two-post rack.

Care should be taken to ensure a hazardous condition is not created due to uneven mechanical loading. Ensure that the entire rack assembly is properly secured. Tipping hazards may cause personal injury and death. The following guidelines are provided to ensure your safety:

When mounting this unit in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack

If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack.

This unit should be mounted at the bottom of the rack if it is the only unit in the rack.

Use caution when pressing the component rail release latches and sliding a component into or out of a rack; the slide rails can pinch your fingers.

4.1.3 Electrical Safety

An electrical outlet that is not correctly wired could place hazardous voltage on metal parts of the system. It is the responsibility of the customer to ensure that the outlet is correctly wired and grounded to prevent an electrical shock.

Use one hand, when possible, to connect or disconnect signal cables to prevent a possible shock from touching two surfaces with different electrical potentials

Do not overload the AC supply branch circuit that provides power to the rack. The total rack load should not exceed 80 percent of the branch circuit rating.

Use only approved power cable(s). If you have not been provided with a power cable for your server, storage system, or appliance, or for any AC-powered option intended for your system, purchase a power cable that is approved for use in your country. The power cable must be rated for the product and for the voltage and current marked on the product's electrical ratings label. The voltage and current rating of the cable should be greater than the ratings marked on the product.

Cleaning: Unplug your system from wall outlet before cleaning. Do not use liquid or aerosol cleaners. Use a damp (not wet) cloth for cleaning.

4.1.4 Thermal Dissipation Requirement

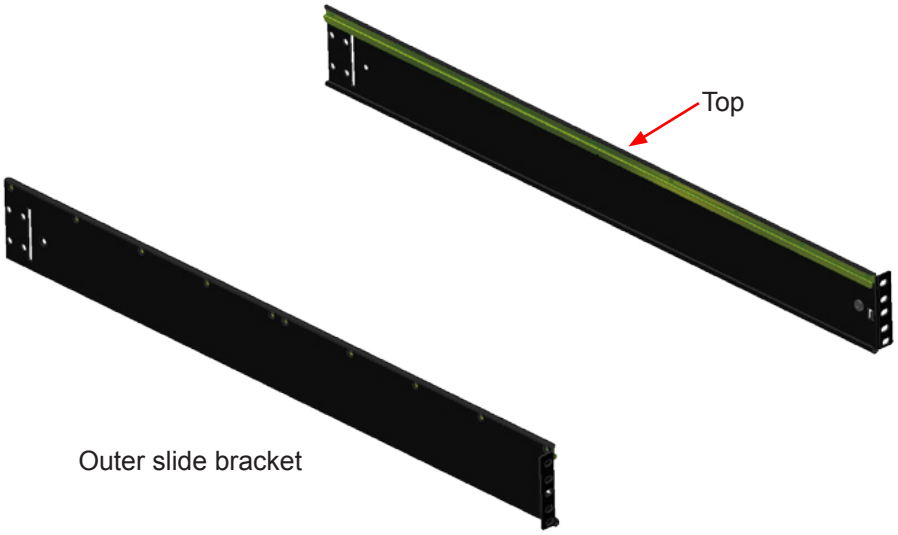
DO not install the chassis in a rack where the internal ambient temperature will exceed 95degrees F (35 degrees C)

DO not install this unit in a rack where the air flow is compromised. Any side, front, or back of the unit used for air flow through the unit must not be direct contact with the rack

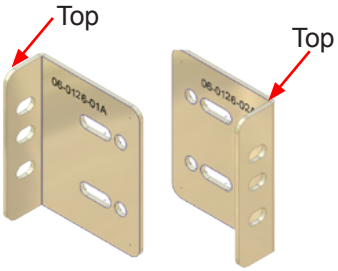
NOTICE: If multiple components are installed in the rack, consider additional cooling to assure efficient operation of the system and other equipment

4.2 Rack Mounting Hardware

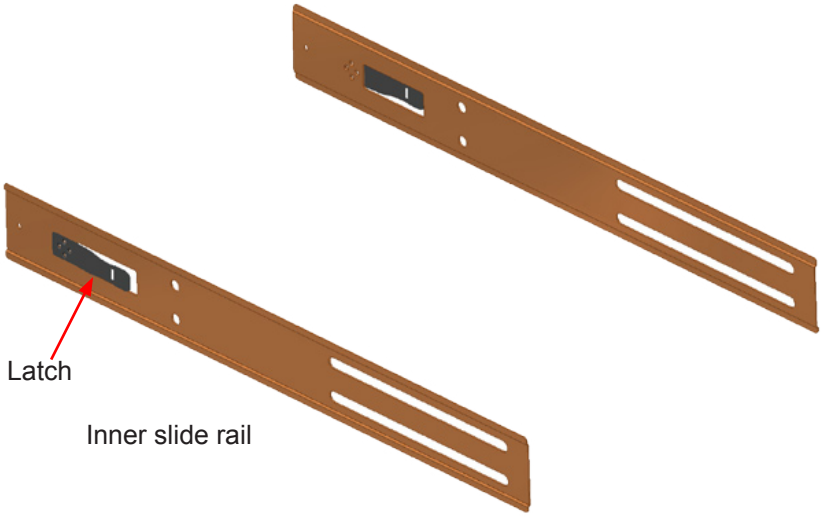
The ESR-series chassis include with the slide rail on the system. The mounting hardware are located in the accessories box. Below are the mounting hardware overview. The inner slide rail has been assemblied into the stroage chassis.



Outer slide bracket

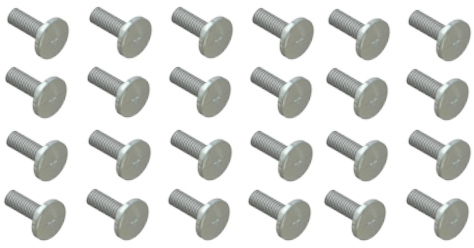


Bracket extender for 28-inch rack
order#
06-0126-01A left
06-0126-02A right

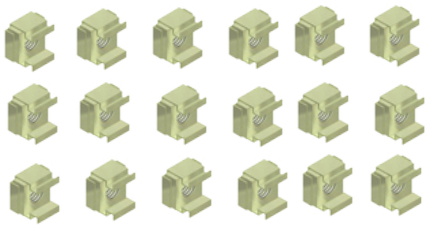


Inner slide rail

Bracket extender for 30-inch rack
order#
06-0138-01A left
06-0138-02A right



M5 x 3/4” Pan Head Screws,
24 pcs (order#09-1052-01A)



M5 Cage Nuts, 16 pcs
(order #09-1053-01A)

M5 x 1” Enclosure Key Pan Head
Screws, 4pcs (order#09-1019-01A)

Figure 114 Rack mounting hardware

NOTICE: The slide rail has been approved by SGS Taiwan to rehold a loading of 300lbs. SGS report number: HL20082/2005

4.3 Install the chassis in a Rack

The ESR-series chassisis specifically designed for rack mounting. It is not designed for use as a desktop system. You can install the system in a four-post cabinet or open rack that is 19 inches wide and between 26”, 28”, 30” and 36” deep.

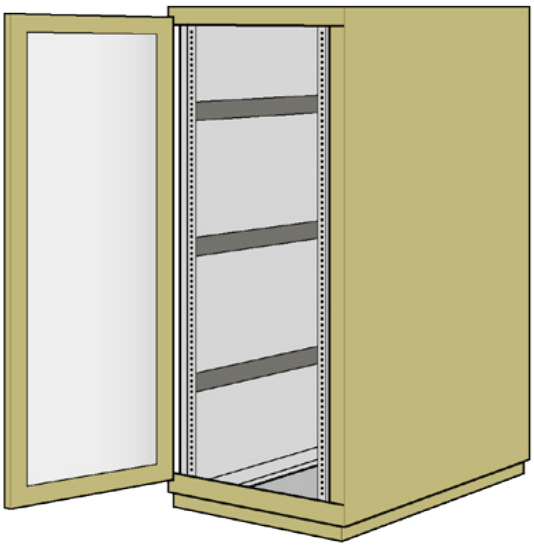


Figure 115 Four post cabinet rack

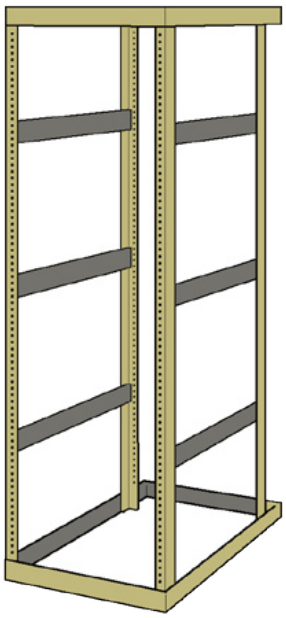


Figure 116 Four post open rack

The brackets and screws necessary to attach the system to a four-post rack with threaded holes or unthreaded round holes are included with your system

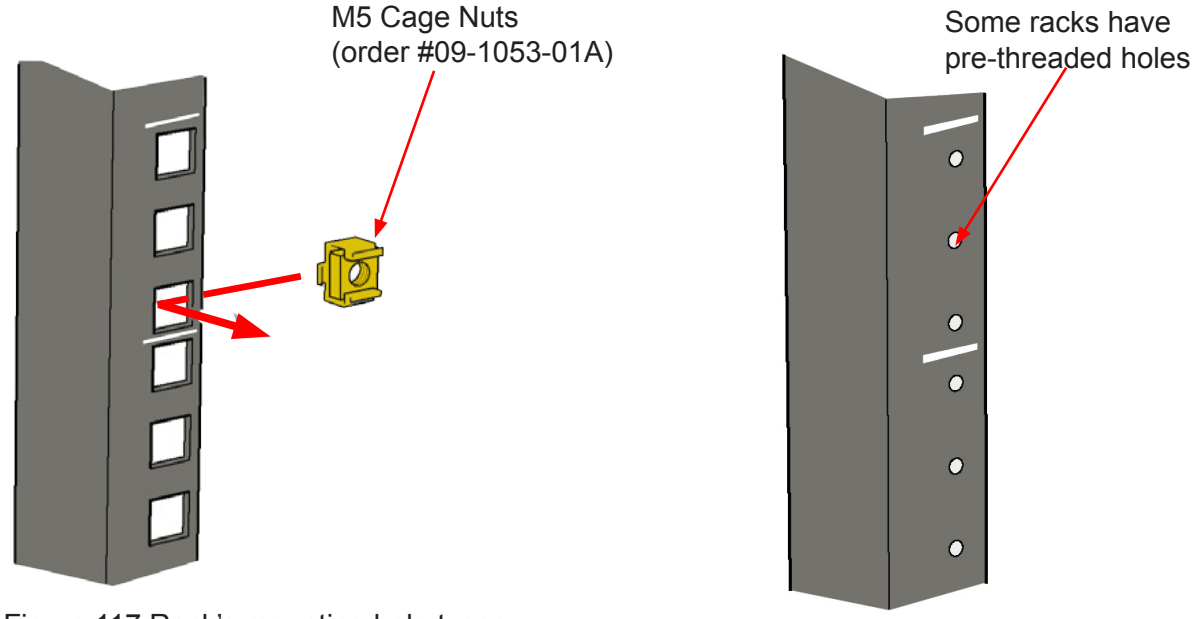


Figure 117 Rack’s mounting hole types

NOTICE: Any rack used for ESR-chassis should meet the specifications of the American National Standards Institute(ANSI)/Electronic Industries Alliance(EIA) standard ANSI/EIA310-D. See your rack documentation for the rack to determine whether it is compatible with these standards

4.3.1 Marking the rack

You must allow 1U (44mm or 1.75 inches) of vertical space for each system you install in the rack. Rack cabients that meet EIA-310D standards have a pattern of three holes per rack unit with center-to-center holes spacing (beginning at the top holes of a 1U space) of 0.625” ,0.625”, and 0.5inch (in metric: 15.9mm, 15.9,, and 12.7mm) for the front and rear vertical rails. Rack cabient usually have round or square holes.

NOTICE: Some vertical rails may be marked by horizontal lines and numbers in 1U increments. You can make a note of the number marking on the rack’s vertical rail.

Following these steps to mark the rack

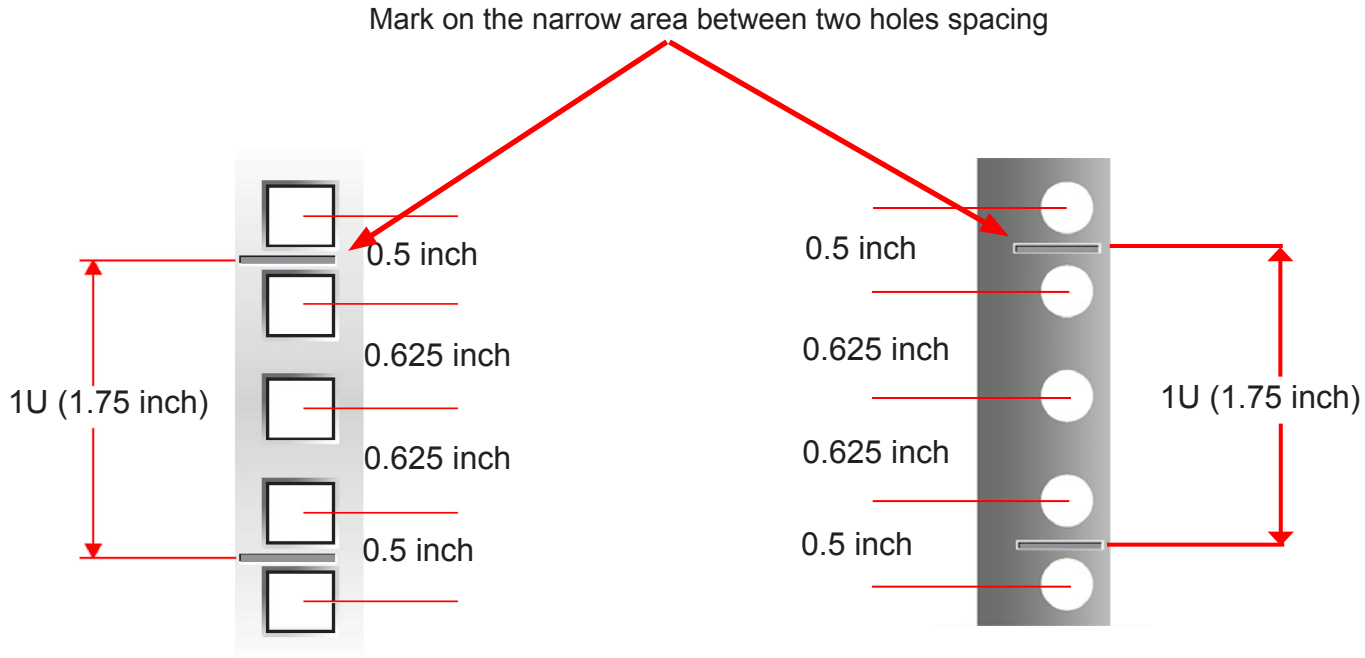


Figure 118 Marking on the rack

1. Place a mark on the rack’s front vertical rails where you want to locate the bottom of the system you are installing in the rack cabient

2. Place a mark 1.75inch above the original mark you made (or count up three holes in a rack that meets EIA-310D standards)

4.3.2 Installing the System

To install the system in the rack, you

1. Assemble the brackets
2. Attach the brackets to the rack
3. Rest the system on the brackets and secure it on the rack

4.3.2.1 Assemble the brackets

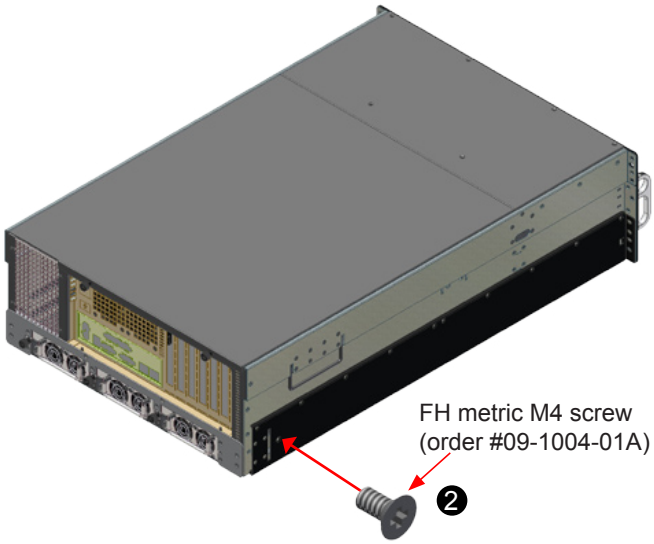


Figure 119 Removing the rack slide security screws

1. Turn off the system and unplug of the power cables,
2. Remove the FH metric M4 screw that secure the rail bracket on both sides of the chassis as shown

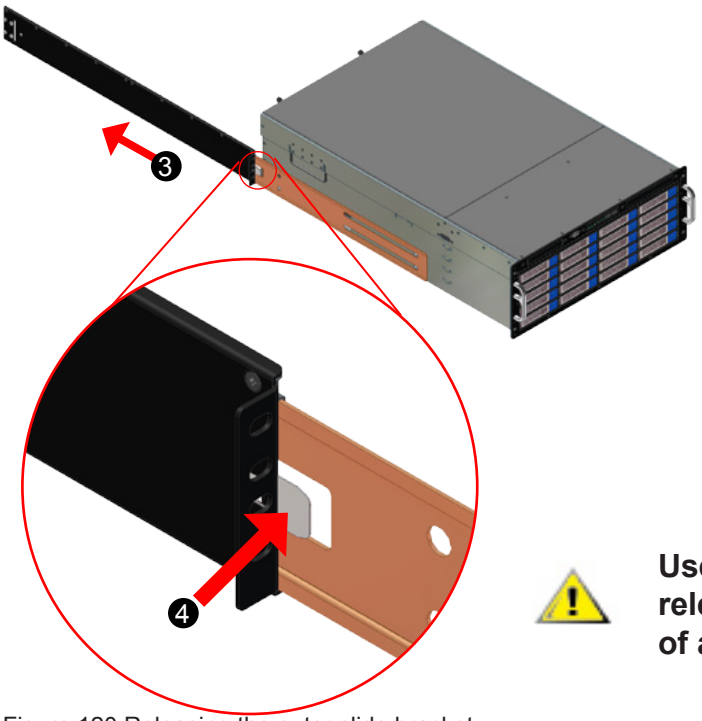


Figure 120 Releasing the outer slide bracket

3. Carefully extend the outer slide bracket to the back until it reach the latch locking mechanism.
4. Push the latch toward the chassis to release the outer slide bracket and carefully pull out the outer slide bracket..

Use caution when pressing the component rail release latches and sliding a component into or out of a rack; the slide rails can pinch your fingers.

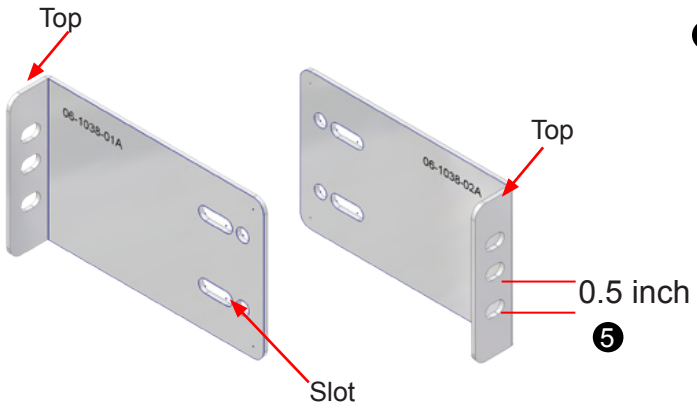


Figure 121 Bracket extenders

❺ Depends on the deep of your rack, use the correspondence bracket extenders. Make sure you are install the bracket extenders in the right orientation, the two holes with a space of 0.5 inch apart is the top side of the bracket extenders.

❻ Place the bracket extender on the rear part of the outer bracket and align the slot of the bracket extender with the mounting holes of the outer rail bracket.

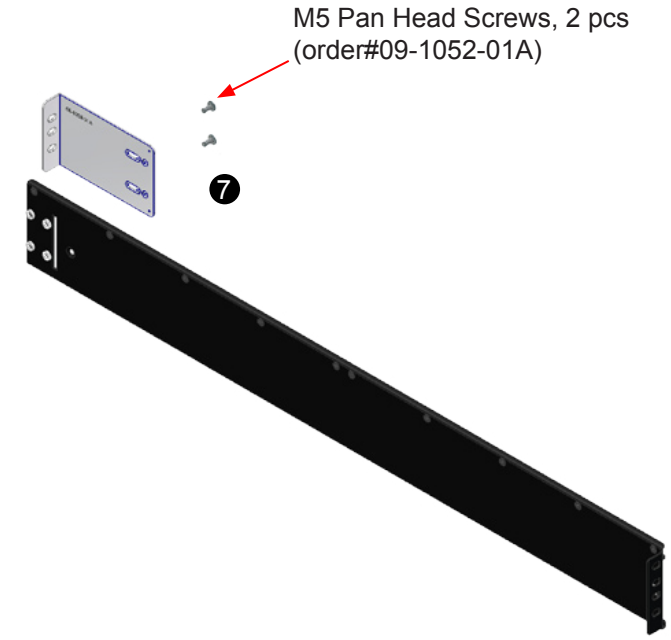


Figure 122 Assembly the outer slide rail and bracket extender

❼ Use the M5 Pan Head Screws (order # 09-1052-01A)Fasten but not tigthen the bracket extender on to the outer slide bracket as shown

❽ Repeat step 5 to step 7 for the other side of the outer slide bracket.

NOTICE: Please read the next page carefully which will help you to locate the correct location on the rack

4.3.2.2 Assemble the brackets

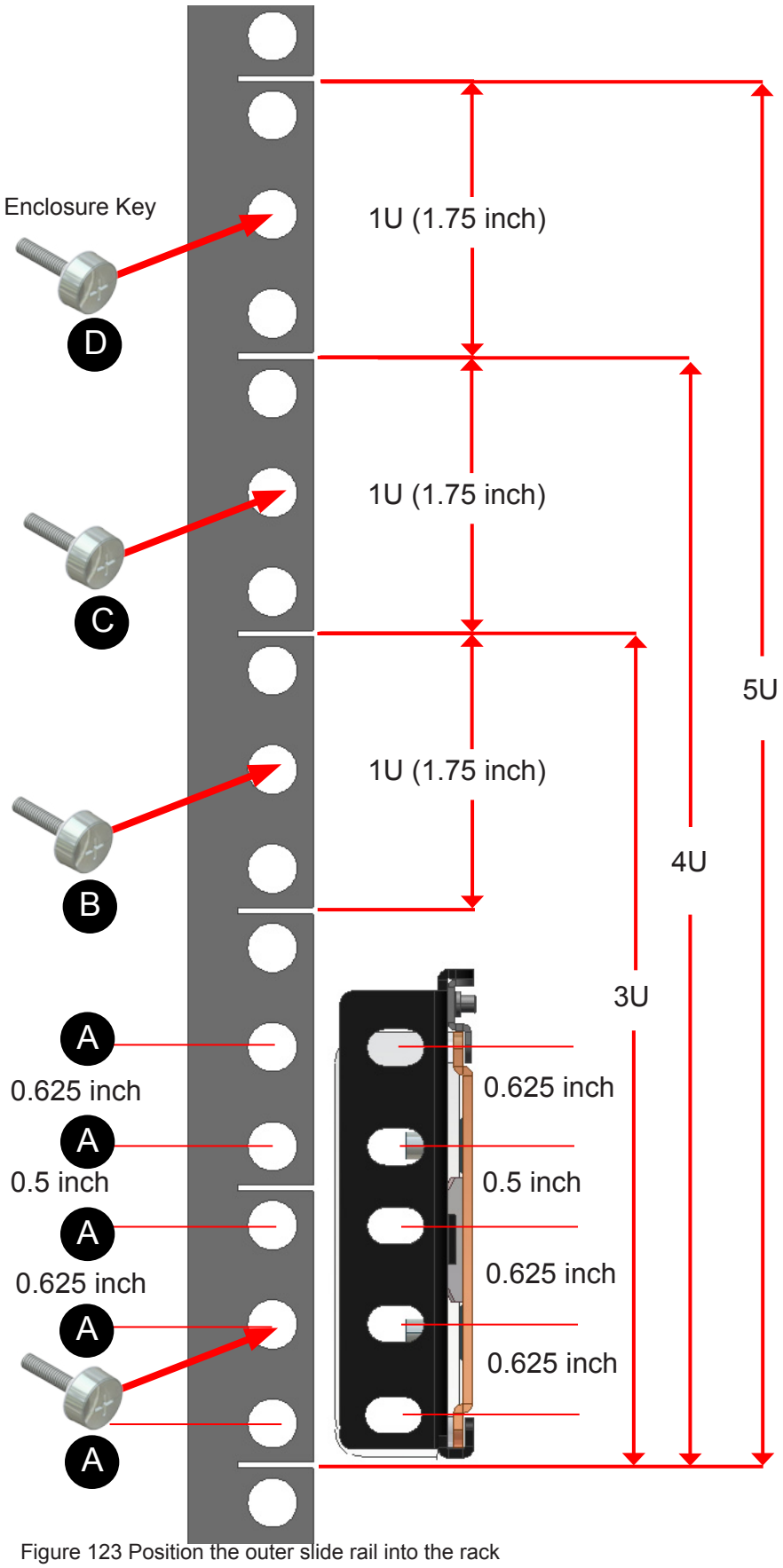


Figure 123 Position the outer slide rail into the rack

1. At the front of the rack cabient, position the outer slide bracket so that is mounting bracket slots fit between the mark.There four slots on the bracket should aligh with the four holes between the marks on the front vertical rail, with the two slot. Look carefully, you will find the two center slot on the bracket has a spacing of 0.5 inch, which match on the mark of the cabient mark that is also 0.5” apart between the two mounting holes.

2. If you rack has unthreaded square holes, install the M5 Cage Nut on location A

3. Install the M5 Cage Nut if it is

   ESR-316 on B

   ESR-420 on C

   ESR-524 on D

   The Enclosure key will be installed in these locations

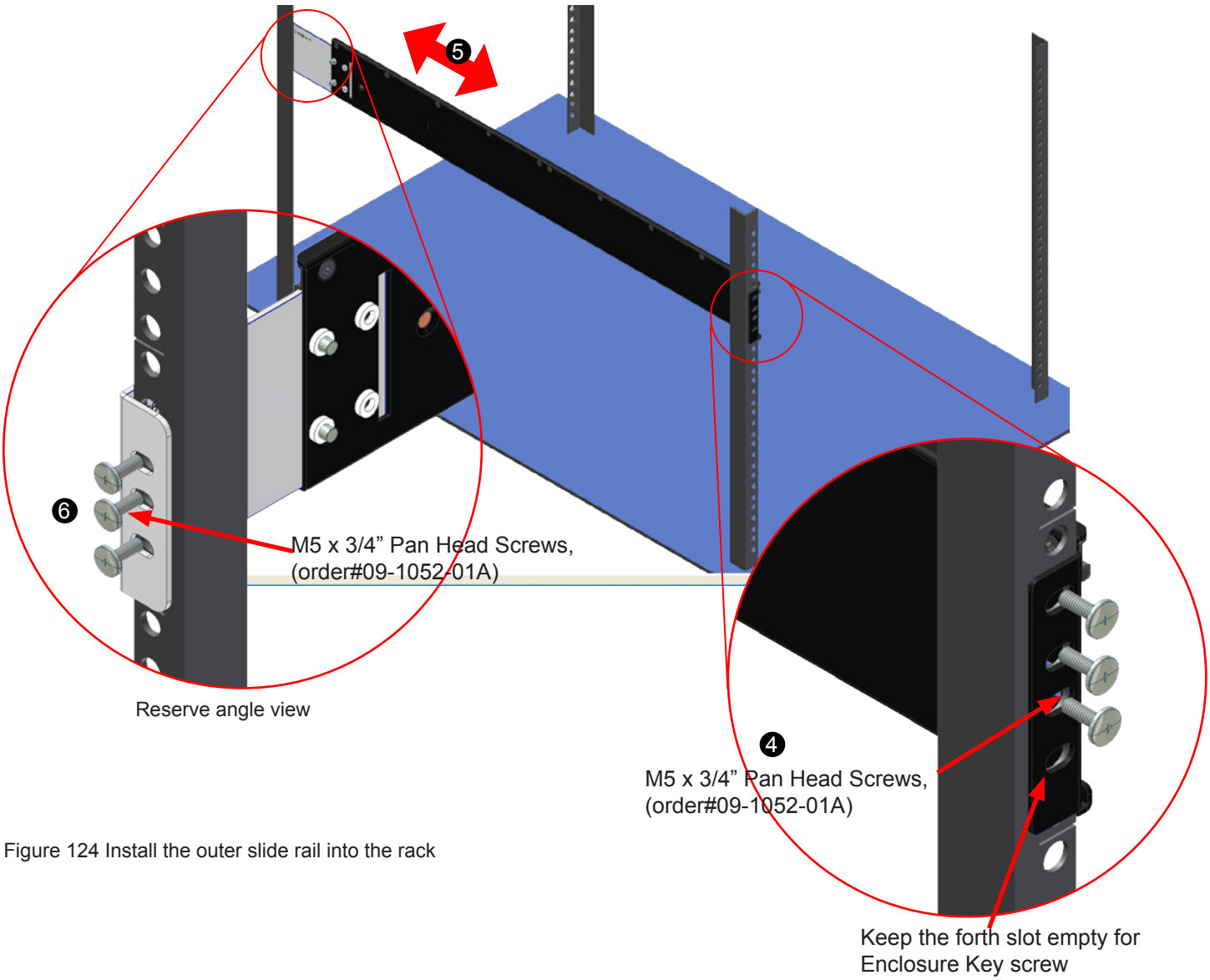


Figure 124 Install the outer slide rail into the rack

❹ Hold the outer slide bracket against one of the front vertical rail of the cabient at the position you marked, then, fasten and tigthen three M5 x3/4” screws (order #09-1052-01A) as shown. Leave the forth slot empty for Enclosure Key

❺ At the back of the cabient, pull back on the bracket extender until the mounting slot align with their respective holes on the back vertical rail.

❻ Install three M5 x3/4” screws (order #09-1052-01A) in the back mounting holes to secure the outer slide bracket to the back vertical rail

❼ Repeat step 4 to step 7 for the outer slide bracket on the other side of the rack

❽ Ensure that both of the slide bracket are mounted at the same position on the vertical rails on each side of the rack

4.3.2.3 Reset the system on the bracket and secure it on the rack

When the brackets are secured to the rack, you can put the storage system in the rack. Follow these steps to mount the ESR-series storage system in the rack.

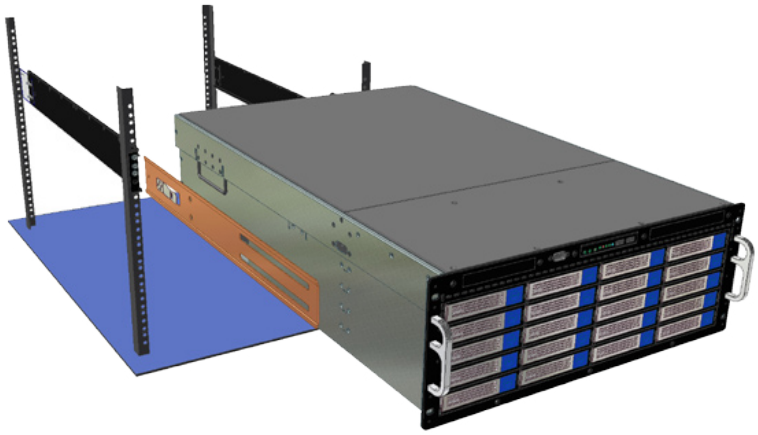


Figure 125 Slide in the chassis into the rack

1. With one person on each side of the system, lift the system so that the inner rail aligh with the outer slide bracket.
2. Engage the inner rail to the outer slide bracket slot
3. Push and slide the system into the rack

NOTICE: After the ESR-series storage system is in the rack, check the front panel of the system and make sure that the four mounting slots are aligh to the rack vertical rail mounting hole. If you find the mounting holes are offset, then, the chassis is not installed in the right position. Reinstall the outer slide bracket again to the right location

Figure 126 Check the mounting holes are align to the rack

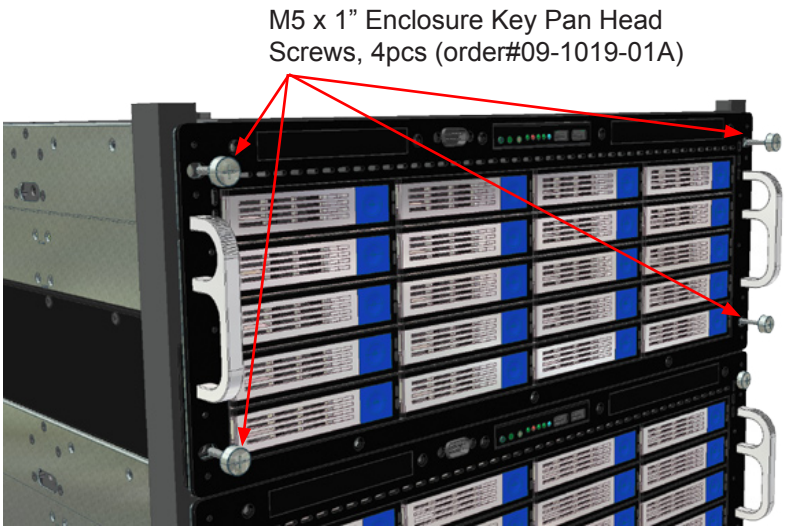


Figure 127 Secure the system by enclosure keys

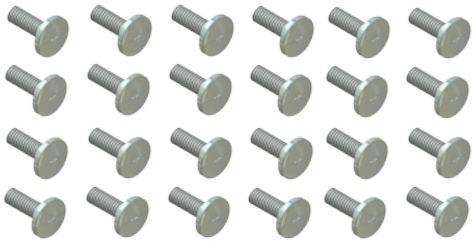
❹ Secure the system by tighten the four M5 x 1” Enclosure key Pan Head screws as shown.

5. Space part order information

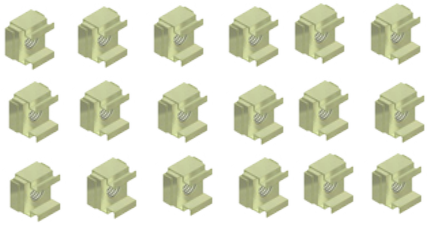
5.1 Kit Accessories Box order # 05-1001-01A

Bracket extender for 30-inch rack
06-0138-01A left
06-0138-02A right

Cable Tie x 4

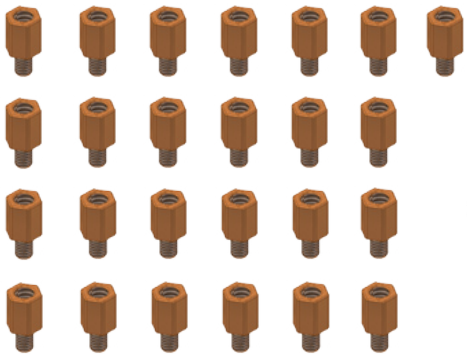


M5 x 3/4” Pan Head Screws,
24 pcs (order#09-1052-01A)

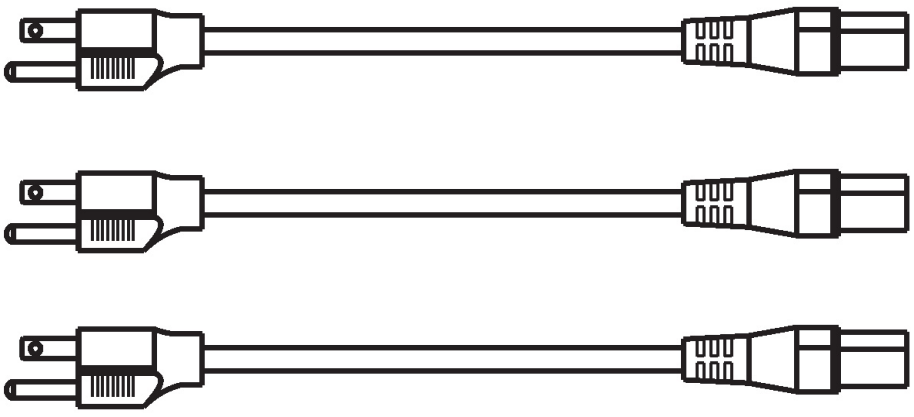


M5 Cage Nuts, 16 pcs
(order #09-1053-01A)

M5 x 1” Enclosure Key Pan Head
Screws, 4pcs (order#09-1019-01A)



#6-32 bolt standoffs 25 pcs
(order #09-1007-01A)



AC Cord North America 3pcs
(order # 17-1012-01A)

#6-32 RH screws 30 pcs
(order #09-1003-01A)

Figure 128 Kit accessories box

5.2 Kit System Fan, 120mm x 120mm x 38mm order # 05-1002-01A

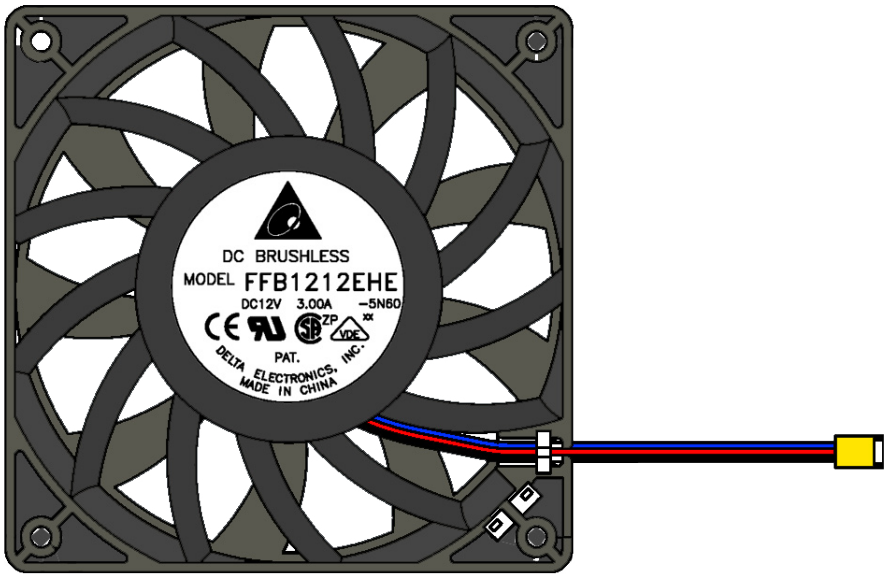
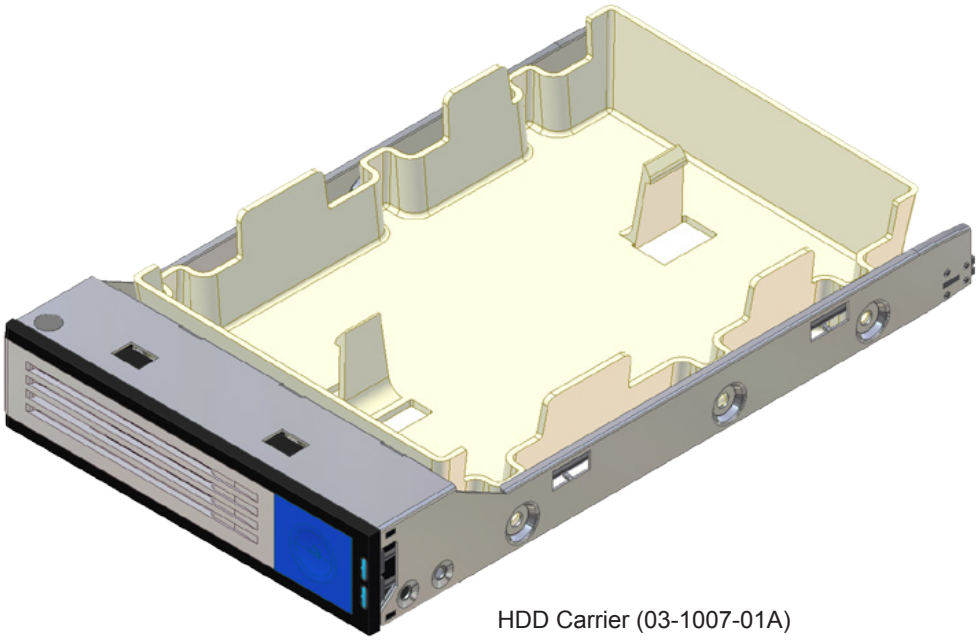


Figure 129 Kit system fan, 120x120x38mm

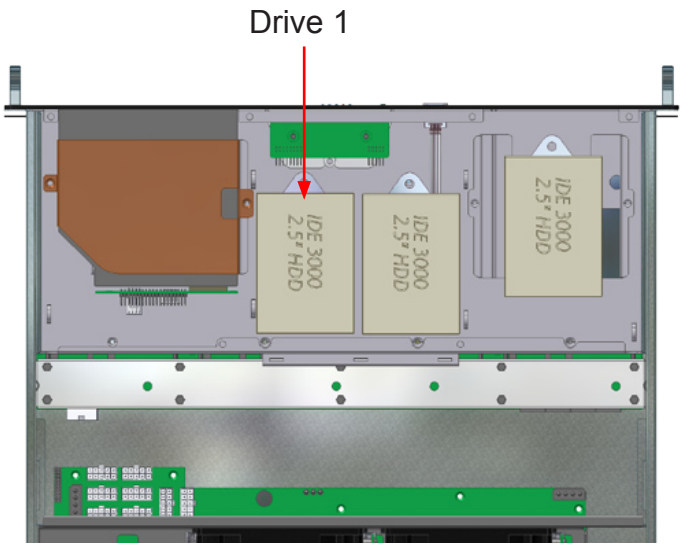
5.3 Kit Hard Disk Drive Carrier order #05-1003-01A



HDD Carrier (03-1007-01A)

Figure 130 Kit hard disk drive carrier

5.4 Kit Slim IDE Drive Kit for Drive 1 order # 05-1004-01A

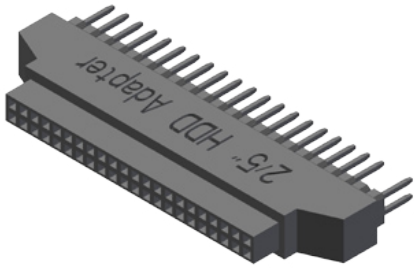


This kit contain the necessary parts to install a 2.5” slim-line IDE hard disk drive on Drive 1 of the ESR-seires storage system. Refer section 3.5 on the user manual for installation instruction.

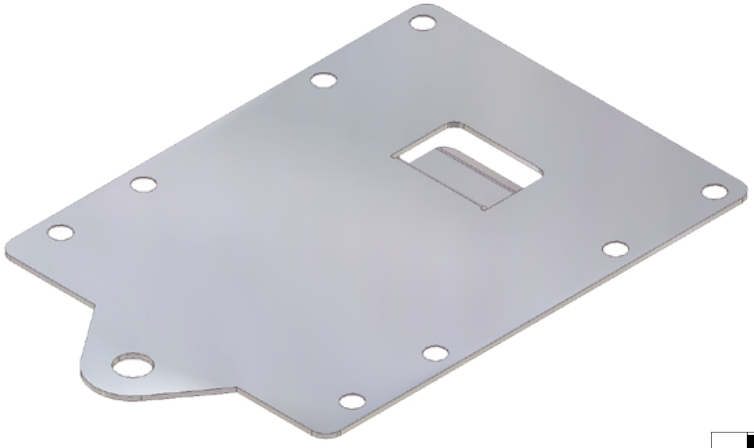
1. 1 x #6-32 Flat Head Screw (09-1002-01A)
2. 4 x M3 Flat Head Screw (9-1013-01A)
3. 1 x 4 pin-to-2pin DC power cable, 4.7” (17-1008-01A)
4. 1 x 40pin IDE data cable, 27.5” (17-1003-02A)
5. 1 x 2.5” to 3.5” IDE Adapter (16-0118-01A)
6. 1 x slim-line HDD mounting bracket (06-0115-01A)

#6-32 FH screw

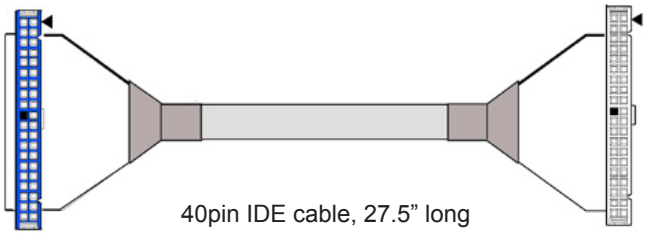
M3 FH screw x 4



2.5” to 3.5” IDE Adapter



Slim-line HDD mounting bracket

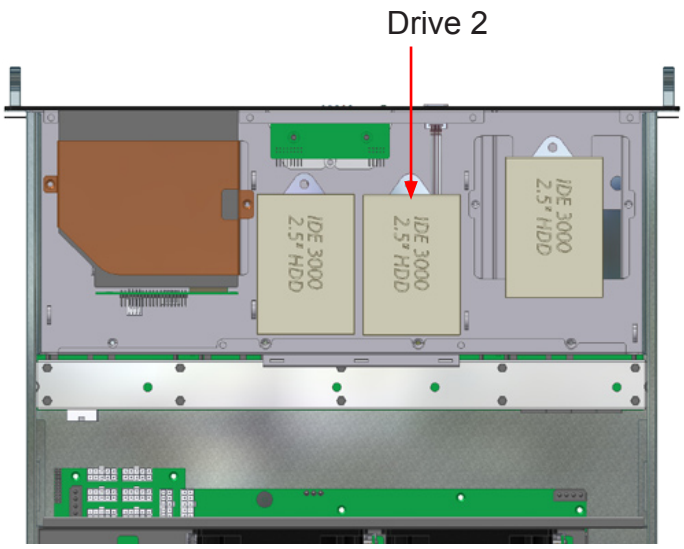


40pin IDE cable, 27.5” long

4 pin-to-2 pin DC Power cable, 4.7” Long

Figure 131 Kit slim IDE 2.5” to 3.5” hard disk drive (drive 1 location)

5.5 Kit Slim IDE Drive Kit for Drive 2 order # 05-1005-01A

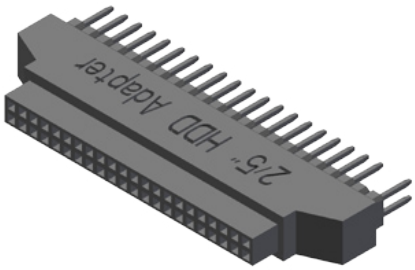


This kit contain the necessary parts to install a 2.5” slim-line IDE hard disk drive on Drive 2 of the ESR-seires storage system. Refer section 3.5 on the user manual for installation instruction.

1. 1 x #6-32 Flat Head Screw (09-1002-01A)
2. 4 x M3 Flat Head Screw (09-1013-01A)
3. 1 x 4 pin-to-2pin DC power cable, 7” (17-1008-02A)
4. 1 x 40pin IDE data cable, 25.5” (17-1003-03A)
5. 1 x 2.5” to 3.5” IDE Adapter 16-0118-01A)
6. 1 x slim-line HDD mounting bracket (06-0115-01A)

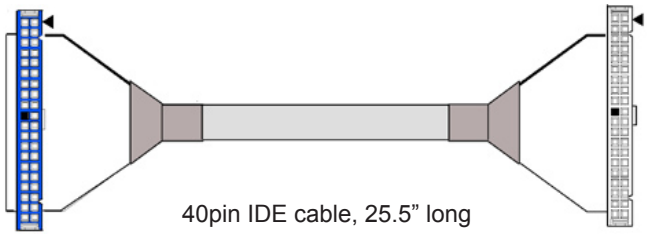
#6-32 FH screw

M3 FH screw x 4



2.5” to 3.5” IDE Adapter

Slim-line HDD mounting bracket

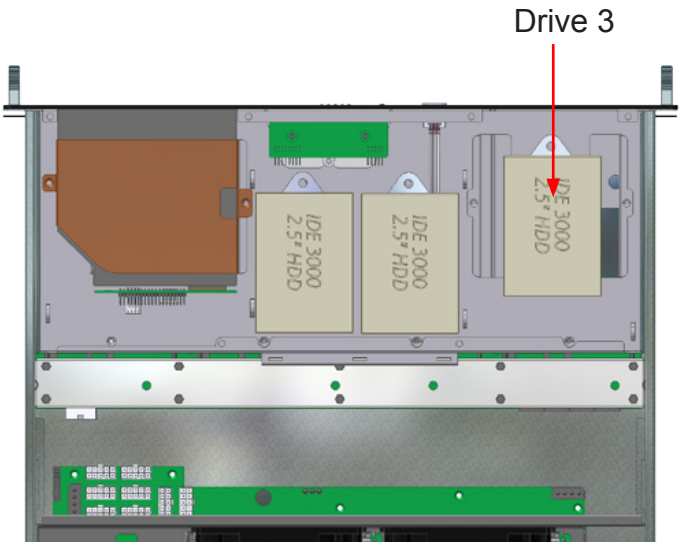


40pin IDE cable, 25.5” long

4 pin-to-2 pin DC Power cable, 7” Long

Figure 132 Kit slim IDE 2.5” to 3.5” hard disk drive (drive 2 location)

5.6 Kit Slim IDE Drive Kit for Drive 3 order # 05-1006-01A

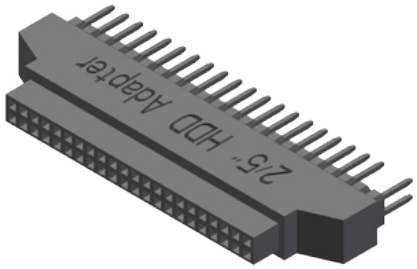


This kit contain the necessary parts to install a 2.5” slim-line IDE hard disk drive on Drive 3 of the ESR-seires storage system. Refer section 3.5 on the user manual for installation instruction.

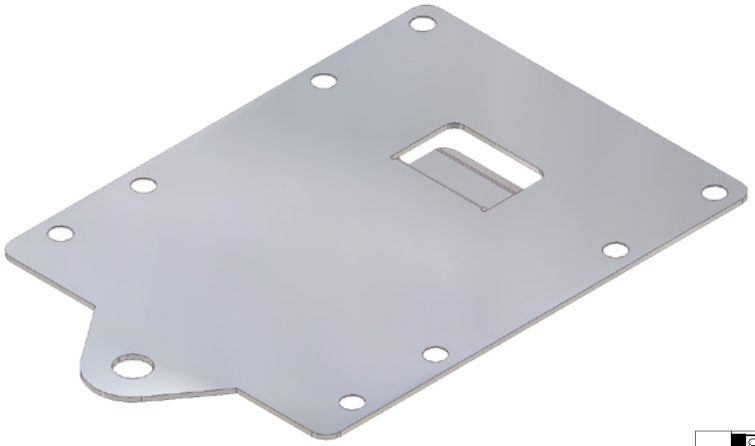
1. 1 x #6-32 Flat Head Screw (09-1002-01A)
2. 4 x M3 Flat Head Screw 09-1013-01A)
3. 1 x 4 pin-to-2pin DC power cable, 11.5” (17-1008-03A)
4. 1 x 40pin IDE data cable, 21.5” (17-1003-04A)
5. 1 x 2.5” to 3.5” IDE Adapter (16-0118-01A)
6. 1 x slim-line HDD mounting bracket (06-0115-01A)

#6-32 FH screw

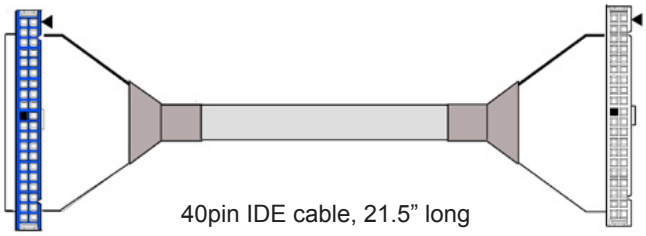
M3 FH screw x 4



2.5” to 3.5” IDE Adapter



Slim-line HDD mounting bracket



40pin IDE cable, 21.5” long

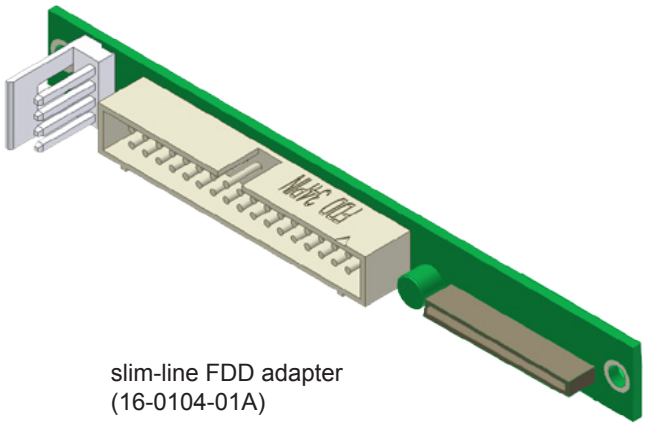
4 pin-to-2 pin DC Power cable, 11.5” Long

Figure 133 Kit slim IDE 2.5” to 3.5” hard disk drive (drive 3 location)

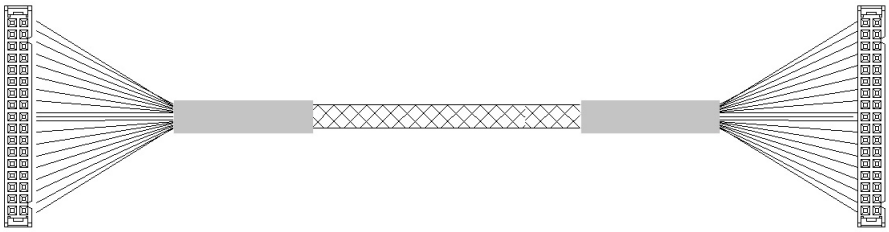
5.7 Kit Slim-line Floppy Drive Disk order # 05-1007-01A

M3 RH screw
(09-1012-01A)

Mini 4 pin DC Power cable
(17-1018-01A)



slim-line FDD adapter
(16-0104-01A)



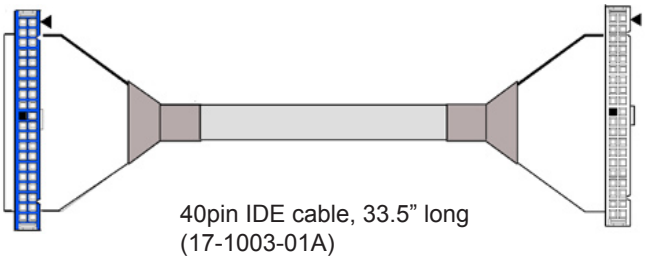
34pin FDD cable (17-1004-01A)

26pin Slim-line FDD flat cable
(17-1019-01A)

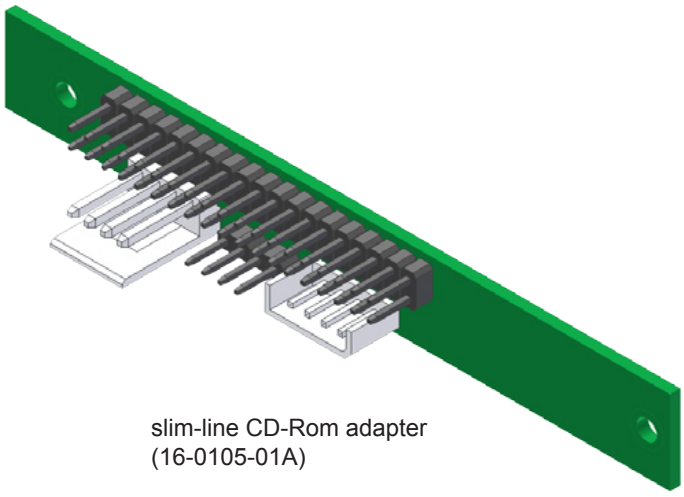
Figure 134 Kit slim-line floppy disk drive

5.8 Kit Slim-line CD/DVD-Rom order # 05-1008-01A

M2 RH screw



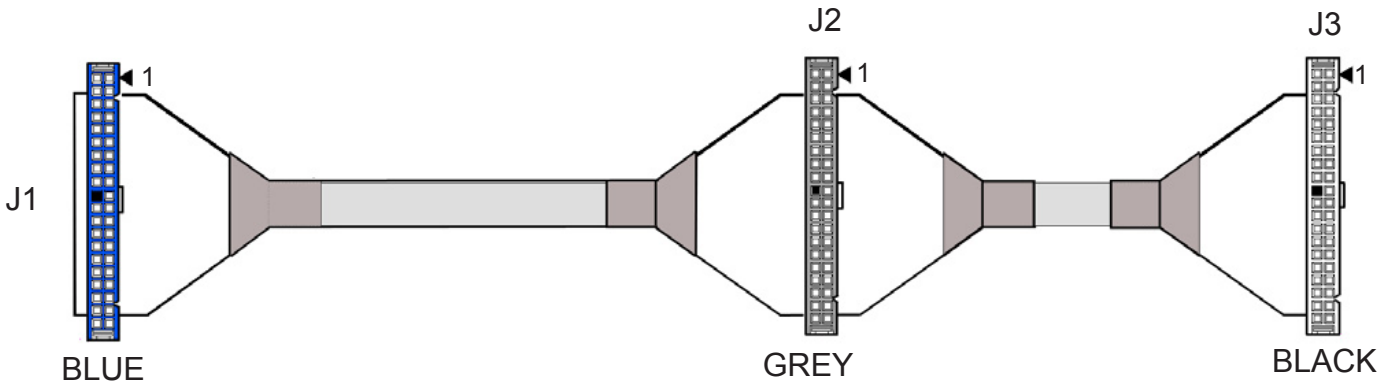
40pin IDE cable, 33.5” long
(17-1003-01A)



slim-line CD-Rom adapter
(16-0105-01A)

Figure 135 Kit slim-line CD/DVD-Rom

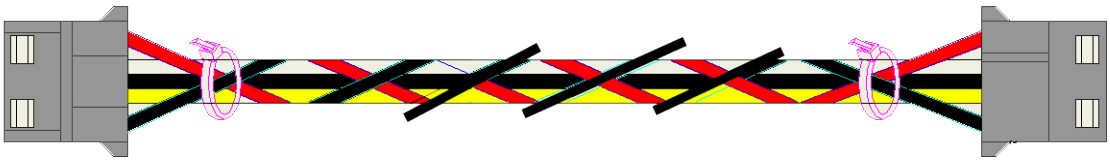
5.9 Kit Two device IDE 40pin cable order # 17-1017-01A



Two Drives IDE cable (order # 17-1017-01A)

Figure 136 Cable kit: Two-drive IDE cable

5.10 Kit, 4-pin power cable for add-in-card, 20 inches order # 17-1007-02A



4pin power cable (order #17-1007-02A)

Figure 137 Cable Kt; 4-pin DC power cable for add-in-card

5.11 Kit, K-TypeThermocouple order # 07-1020-01A

4pin power cable (order #17-1020-01A)

Figure 138 Cable kit: 2-pin thermocouple with cable

5.12 Kit Power Supply Modular, ESR-316; 650W order # 05-1009-01A

Figure 139 Kit power supply modular for 650W

5.13 Kit Power Supply Modular, ESR-420, ESR-524 ; 950W order # 05-1010-01A

Figure 140 Kit power supply modular for 950W

5.14 Kit Power Supply Modular, ESR-524 ; 1350W order # 05-1011-01A

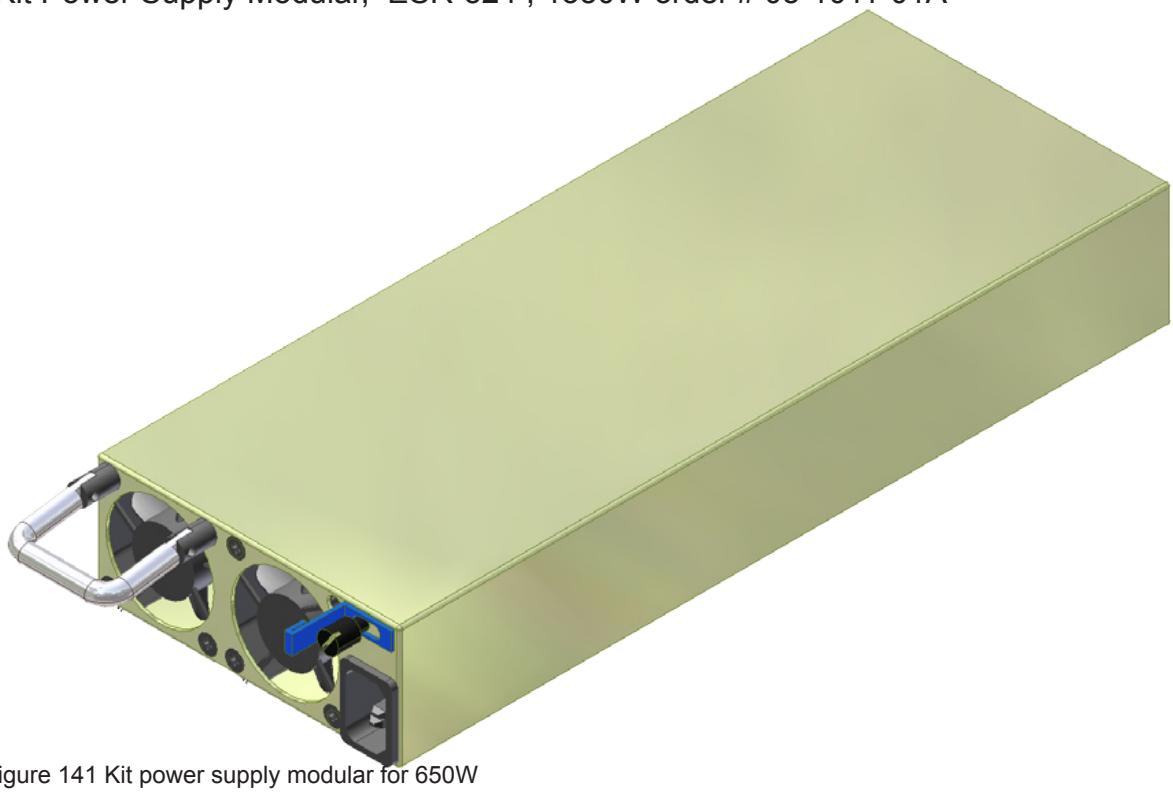


Figure 141 Kit power supply modular for 650W

5.15 Kit AC Power inlet Cable order # 17-1018-01A

Figure 142 Cable Kit: AC Cord North America (order # 17-1018-01A)

Figure xx AC Cord Australia and New Zealand (order # 17-1018-XXX)

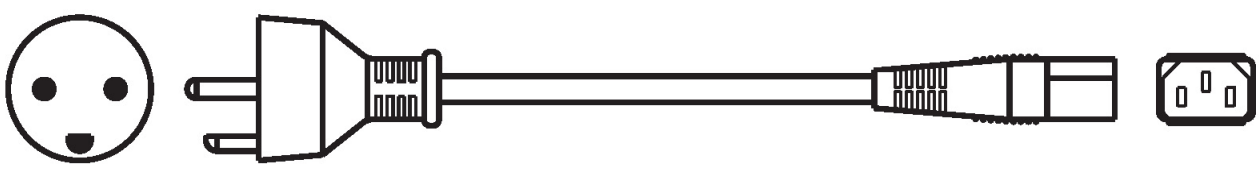


Figure xx AC Cord Danish (order # 17-1018-XXX)

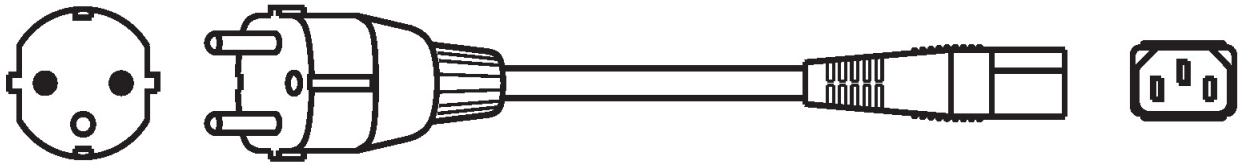


Figure xx AC Cord Europe (order # 17-1018-XXX)

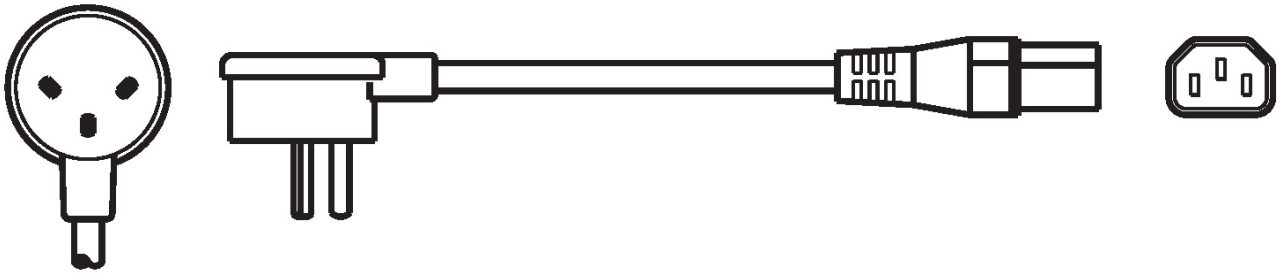


Figure xx AC Cord Isreali (order # 17-1018-XXX)

Figure xx AC Cord Italy (order # 17-1018-XXX)

Figure xx AC Cord Swiss (order # 17-1018-XXX)

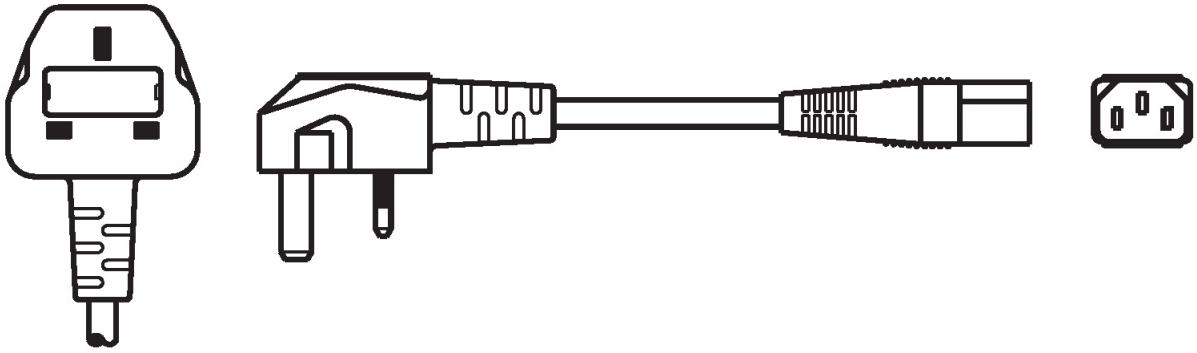


Figure xx AC Cord U.K. (order # 17-1018-XXX)

5.16 Kit 28 inches bracket extender order # 05-1012-01A

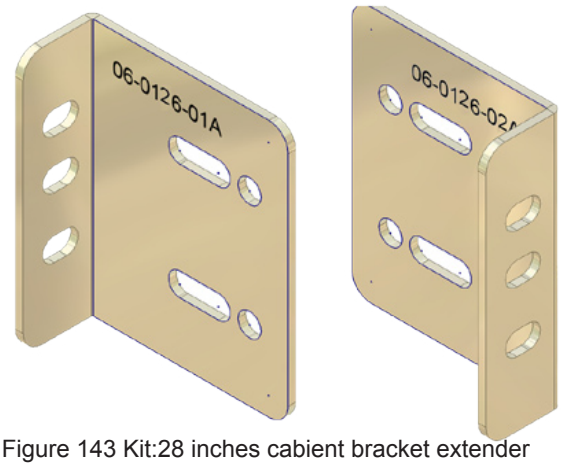


Figure 143 Kit:28 inches cabient bracket extender

Bracket extender for 28-inch rack
06-0126-01A left
06-0126-02A right

5.17 Kit 30 inches bracket extender order # 05-101301A

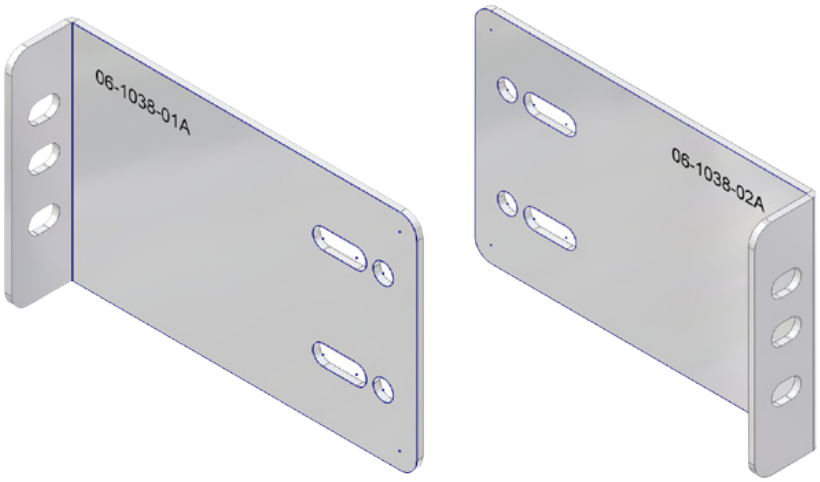


Figure 144 Kit:30 inches cabient bracket extender

Bracket extender for 30-inch rack
06-0138-01A left
06-0138-02A right

5.18 Kit 36 inches bracket extender order # 05-1014-01A

Figure xx Kit:36 inches cabient bracket extender

5.19 Kit SCSI Backplane order # 05-1015-01A

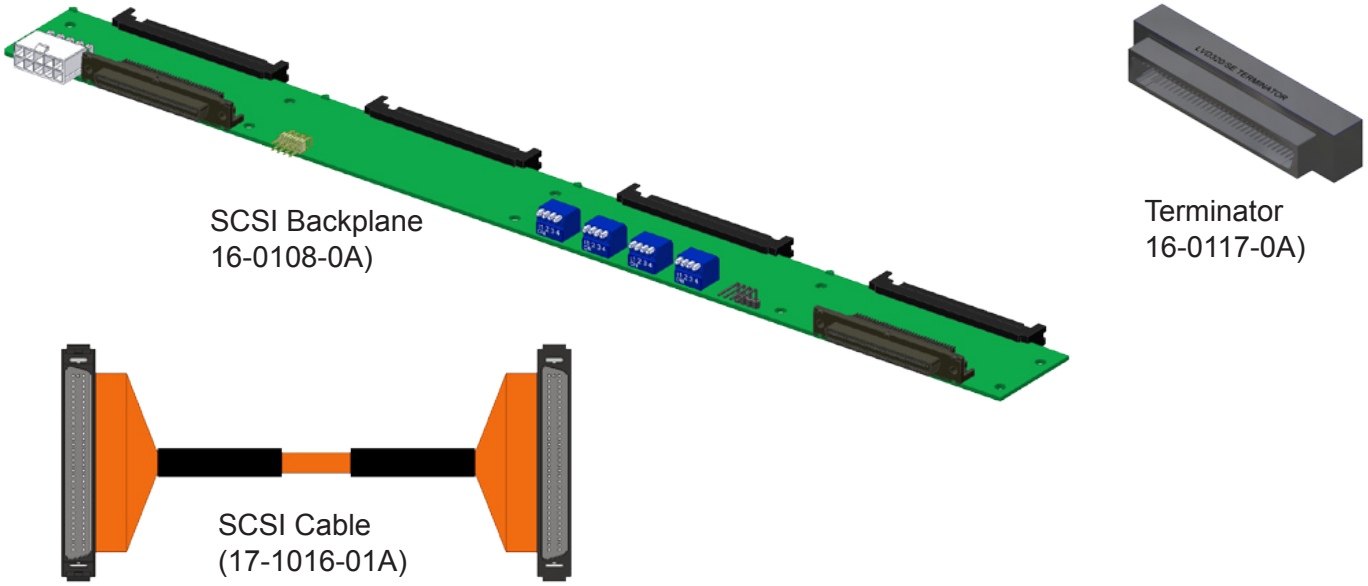


Figure 145 Kit: SCSI backplane, 4 drives

5.20 Kit SCSI Backplanes (Daisy Chain 8 drives) order # 05-1016-01A

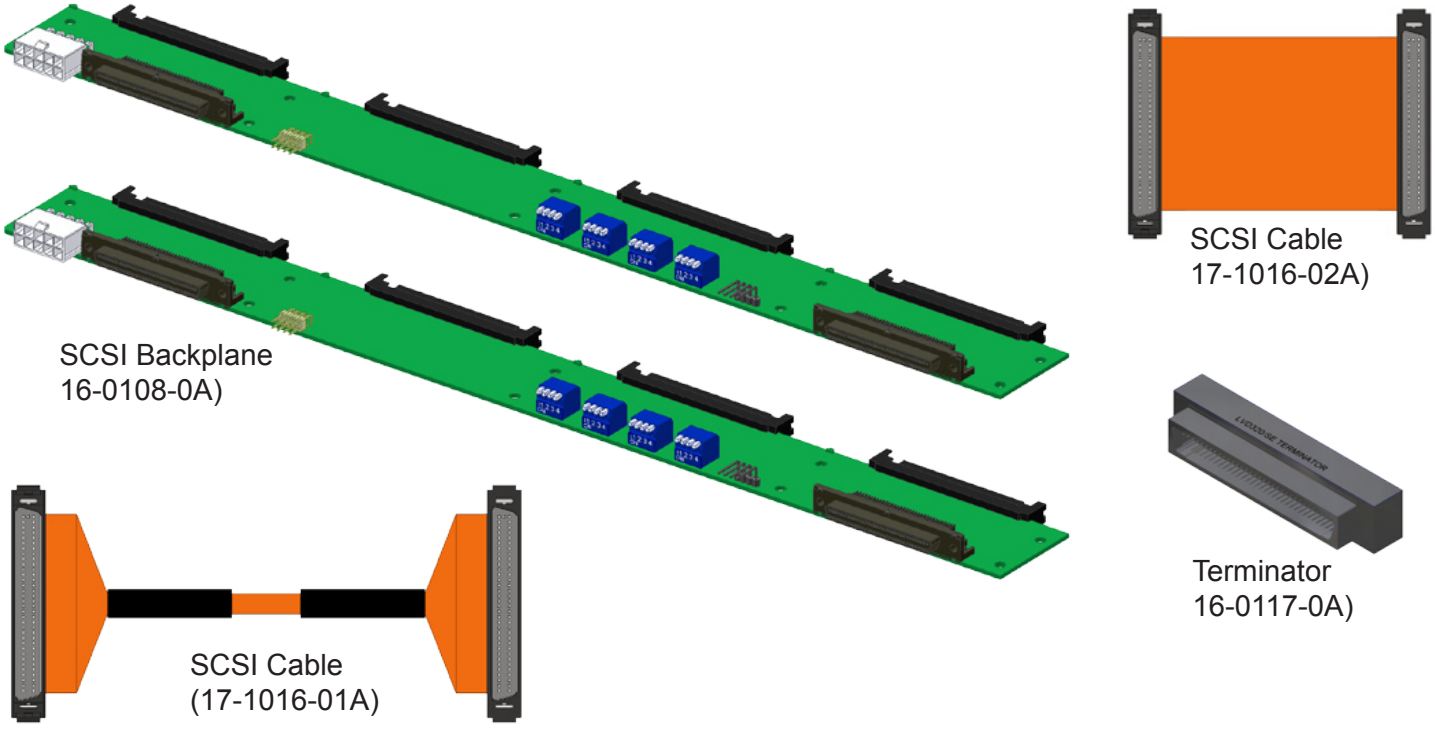


Figure 146 Kit: SCSI backplane, 8 drives

5.21 Kit SCSI Backplanes (Daisy Chain 12 drives) order # 05-1017-01A

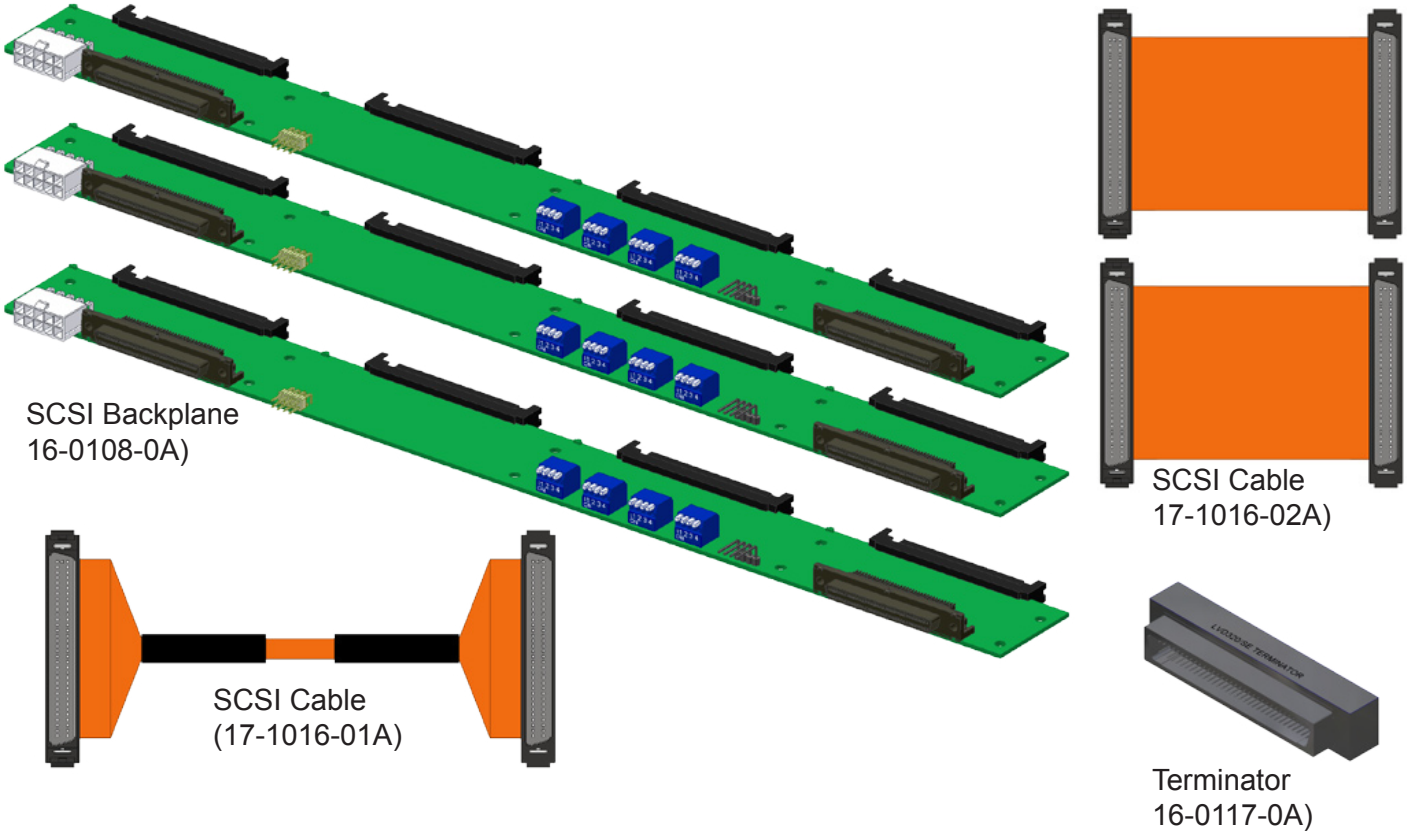


Figure 147 Kit: SCSI backplane, 12 drives

5.22 Kit Serial ATA Backplane order # 05-1018-01A

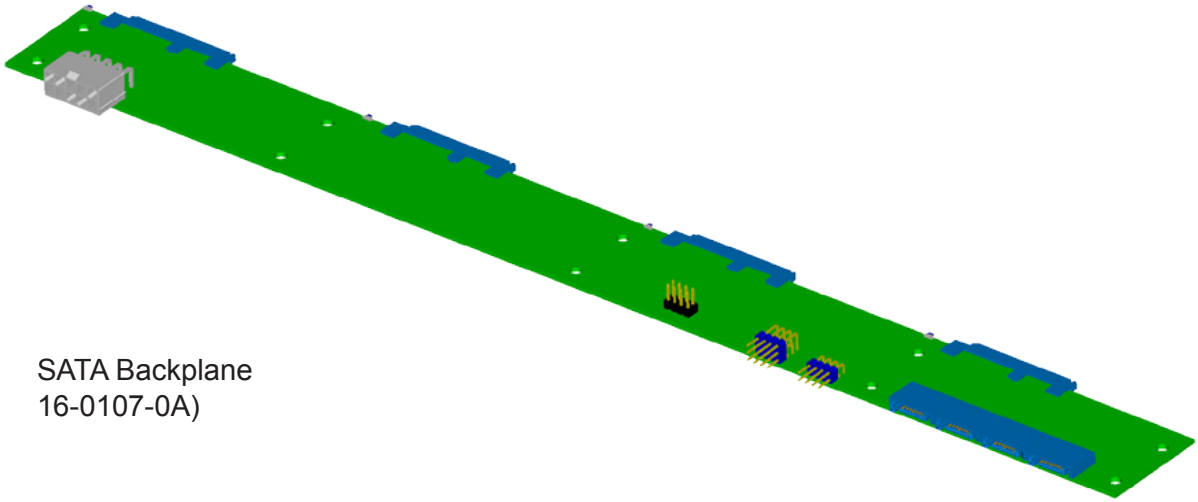


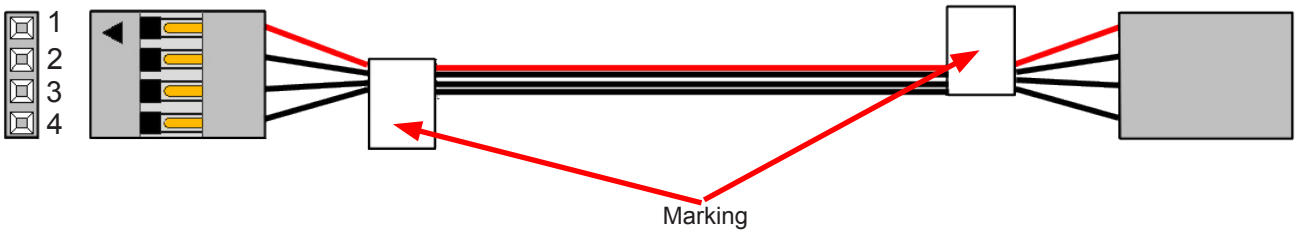
Figure 148 Kit: Serial ATA Point-to-Point backplane

5.23 Kit Point-to-Point Serial ATA cable, 19.5 inches long with latch

Cable Order #	Markings	Instruction
17-1011-01A	HDD “0”	Connect to Drive 0 on the backplane
17-1011-02A	HDD “1”	Connect to Drive 1 on the backplane
17-1011-03A	HDD “2”	Connect to Drive 2 on the backplane
17-1011-04A	HDD “3”	Connect to Drive 3 on the backplane
17-1011-05A	HDD “4”	Connect to Drive 4 on the backplane
17-1011-06A	HDD “5”	Connect to Drive 5 on the backplane
17-1011-07A	HDD “6”	Connect to Drive 6 on the backplane
17-1011-08A	HDD “7”	Connect to Drive 7 on the backplane
17-1011-09A	HDD “8”	Connect to Drive 8 on the backplane
17-1011-10A	HDD “9”	Connect to Drive 9 on the backplane
17-1011-11A	HDD “10”	Connect to Drive 10 on the backplane
17-1011-12A	HDD “11”	Connect to Drive 11 on the backplane
17-1011-13A	HDD “12”	Connect to Drive 12 on the backplane
17-1011-14A	HDD “13”	Connect to Drive 13 on the backplane
17-1011-15A	HDD “14”	Connect to Drive 14 on the backplane
17-1011-16A	HDD “15”	Connect to Drive 15 on the backplane
17-1011-17A	HDD “16”	Connect to Drive 16 on the backplane
17-1011-18A	HDD “17”	Connect to Drive 17 on the backplane
17-1011-19A	HDD “18”	Connect to Drive 18 on the backplane
17-1011-20A	HDD “19”	Connect to Drive 19 on the backplane
17-1011-21A	HDD “20”	Connect to Drive 20 on the backplane
17-1011-22A	HDD “21”	Connect to Drive 21 on the backplane
17-1011-23A	HDD “22”	Connect to Drive 22 on the backplane
17-1011-24A	HDD “23”	Connect to Drive 23 on the backplane

Figure 149 Cable Kit: Sere ial ATA Point-to-Point cable

5.24 Kit Serial ATA hard disk status signal cable



Cable Order #	Markings	Instruction
17-1013-01A	HDD “0-3”	Connect to Drive 0-3 on the backplane
17-1013-02A	HDD “4-7”	Connect to Drive 4-7 on the backplane
17-1013-03A	HDD “8-11-”	Connect to Drive 8-11 on the backplane
17-1013-04A	HDD “12-15”	Connect to Drive 12-15 on the backplane
17-1013-05A	HDD “16-19”	Connect to Drive 12-15 on the backplane
17-1013-06A	HDD “20-23”	Connect to Drive 12-15 on the backplane

Figure 150 Cable Kit: Serial ATA HDD status signal cable

5.25 Kit Multi-lane Serial ATA Backplane order # 05-1019-01A

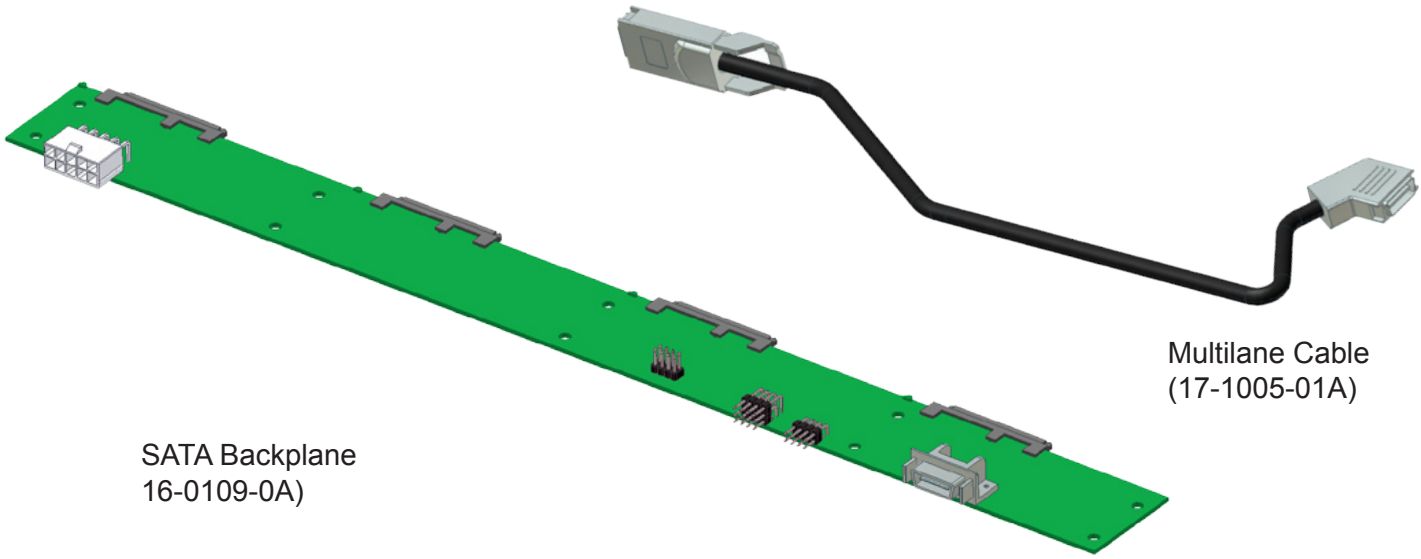
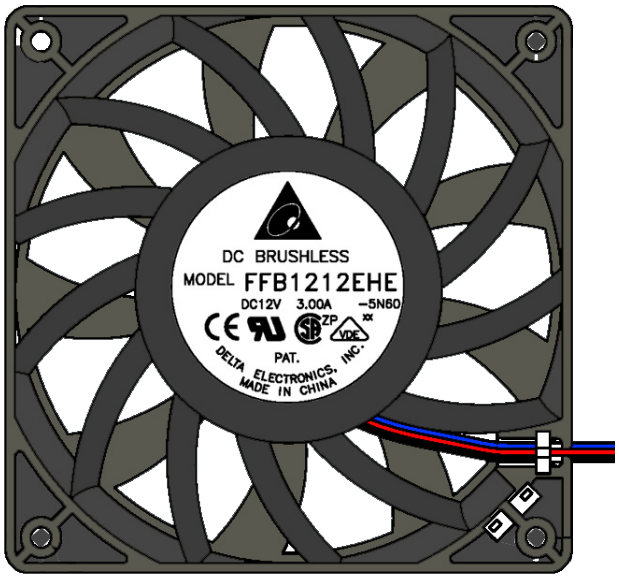


Figure 151 Kit: Serial ATA Multilane backplane

6. System Fan Specification 120mm x 120mm x 38mm



P-V curve

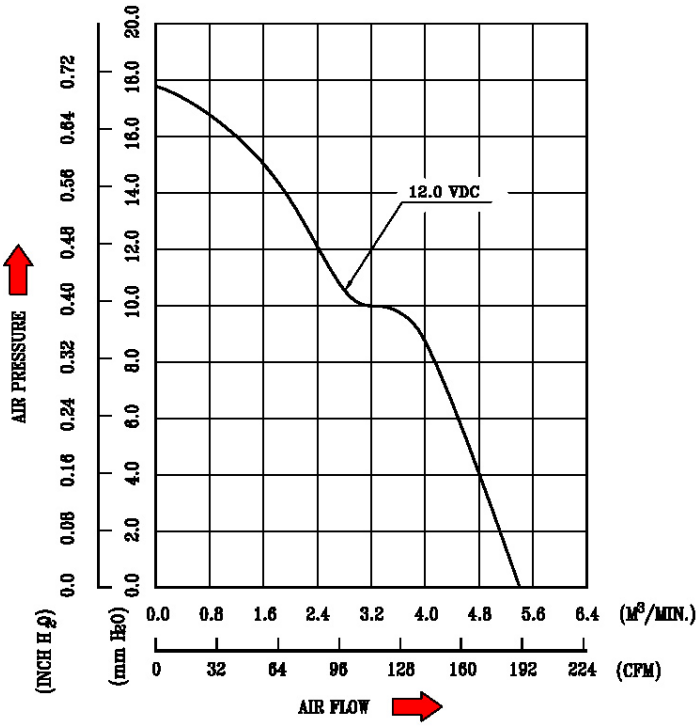


Figure 152 System fan specification and P-V curve

Specification

ITEM	DESCRIPTION
Model Number	Delta FFB1212EHE-5N60
Rated Voltage	12V DC
Input Voltage	7.0-13.2V DC
Input Current	2.0 (Max 3.0)A
Speed	4000 R.P.M.
Max Air Flow	190CFM (5.38 M^3/min) at zero static pressure
Max Air Pressure	0.697 inchH_20 (17.7mmH_20)
Acoustical Noise	59dB-A
Insulation Type	UL: Class A
Over current shut down	Yes, shut down when locking rotor
Starting protection	Yes, start at low speed, after 10 sec, full speed
Life expectance	(70,000 hours) 8 years, continuous at 40 degree C
Operating temperature	-10 to 50 degree C
Operating humidity	5 to 90 % RH
Material	Plastic UL 94V-0
Ball Bearing system	Two Ball Bearing
Dimension	120mm x 120mm x 38mm

Table 48 System fan specification

7. Power Supply Specification

7.1 650W 2+1 Redundant Power Supply

Figure 153 650W 2+1 Redundant Power Supply

DC Output Characteristics

Output Voltage	Output Current	
	MIN(A)	MAX(A)
5V	3.0	60
12V	2	40
-5V	0.05	1
-12V	0.05	1
3.3V	1.0	40
+5VSB	0.1	2.5

Table 49 650W PSU DC Output Characteristics

Remarks: Total current of +5V and +3.3V not exceed 70A
Total +5V and +3.3V and +12V power not exceed 630W

Specification

ITEM	DESCRIPTION
Model Number	EMAC R3G-6650P
Input Voltage/Ferquency	90-264 V AC/47~63Hz
Input Current	9.0/5.0 A for 115/230 VAC
Inrush current	80A/100A Max for 115/230 VAC per modular
Connector Type*	EPS 12V*
Active Power Factor Correction built	Yes, meet IEC-1000-3-2 Class D
EMI Noise Filter	FCC Class B, CISR22 CLass B
Safety:	UL 1950, CSA 22.2 No/950 TUV IEC 950
Smart I^2C interface design	Yes
MTBF	67792 continuous at 40 degree C
Operating temperature	0 to 40 degree C
Efficiency	63 % Typical, at full load
Dimension	82mm(H) x 127mm(W) x 300mm(D)

Table 50 650W power supply specification

Connector type for ATX2.03, ATX12V(Pentium 4), WTX or AMD-GES are available, but for special only. Contact your sale representative for more information

7.2 950W 2+1 Redundant Power Supply

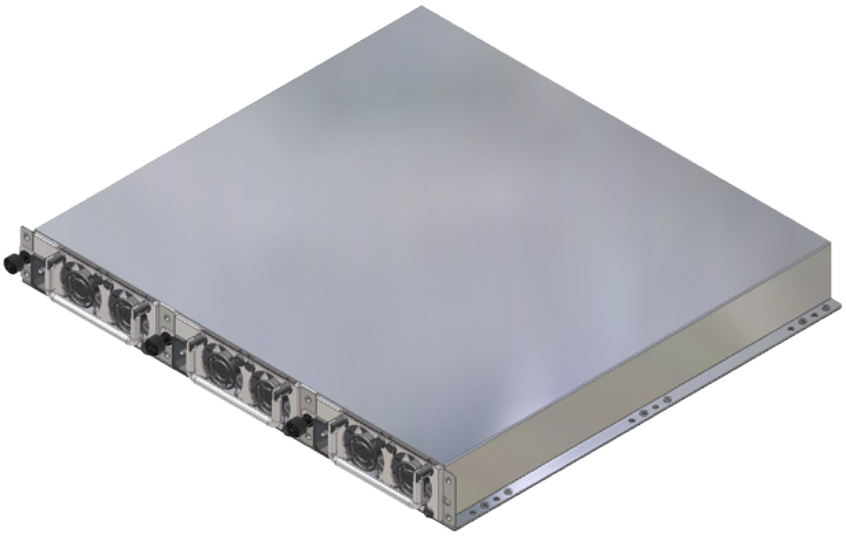


Figure 154 950W 2+1 Redundant Power Supply

DC Output Characteristics

Output Voltage	Output Current	
	MIN(A)	MAX(A)
5V	3.0	44
12V1	2	30
12V2	2	50
-5V	0.2	1.2
-12V	0.2	1.2
3.3V	2.0	44
+5VSB	0.4	3.5

Remarks: Total current of +5V and +3.3V not exceed 80A
Total +12V1 and +12V2 max output not exceed 72A
Total +5V and +3.3V and +12V power not exceed 890W

Table 51 950W PSU DC Output Characteristics

Specification

ITEM	DESCRIPTION
Model Number	EMAC M1G3-6930P
Input Voltage/Ferquency	90-264 VAC/47~63Hz
Input Current	9.0/5.0 A for 115/230 VAC
Inrush current	65A/120A Max for 115/230 VAC per modular
Connector Type*	EPS 12V*
Active Power Factor Correction built	Yes, meet IEC-1000-3-2 Class D
EMI Noise Filter	FCC Class B, CISR22 CLass B
Safety:	UL 1950, CSA 22.2 No/950 TUV IEC 950
Smart I^2C interface design	Yes
MTBF	8 years, continuous at 40 degree C
Operating temperature	0 to 40 degree C
Operating humidity	20-95% RH
Efficiency	67 % Typical, at full load
Dimension	42mm(H) x 335mm(D) x 369mm(W)

Table 52 950W power supply specification

Connector type for ATX2.03, ATX12V(Pentium 4), WTX or AMD-GES are available, but for special only. Contact your sale representative for more information

7.3 1350W 3+1 Redundant Power Supply

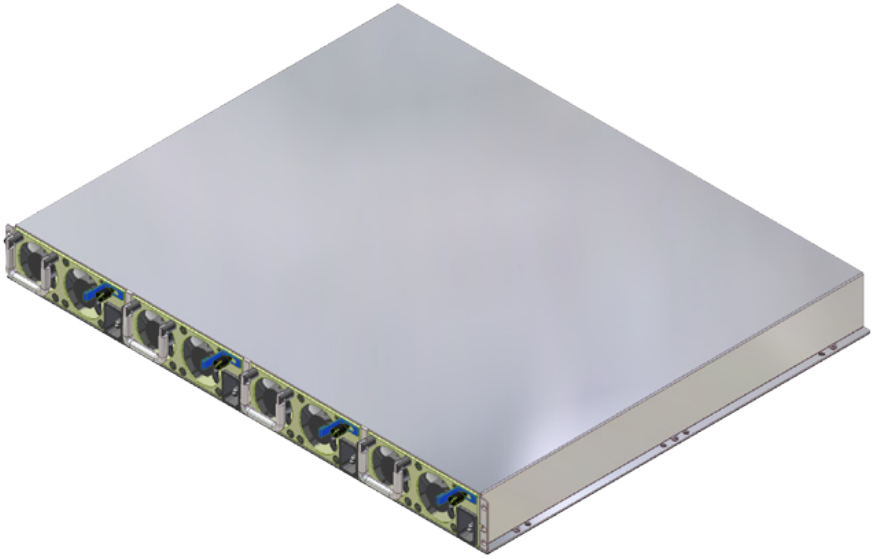


Figure 155 1350W 3+1 Redundant Power Supply

DC Output Characteristics

Output Voltage	Output Current	
	MIN(A)	MAX(A)
5V	6	84.5
12V	2	90
-5V	0.2	1.2
-12V	0.3	1.3
3.3V	3.5	67.5
+5VSB	0.4	3.5

Table 53 1350W PSU DC Output Characteristics

Specification

ITEM	DESCRIPTION
Model Number	EMAC M1W4-6D50P
Input Voltage/Ferquency	90-264 VAC/47~63Hz
Input Current	9.0/5.0 A for 115/230 VAC
Inrush current	65A/120A Max for 115/230 VAC per modular
Connector Type*	EPS 12V*
Active Power Factor Correction built	Yes, meet IEC-1000-3-2 Class D
EMI Noise Filter	FCC Class B, CISR22 CLass B
Safety:	UL 1950, CSA 22.2 No/950 TUV IEC 950
Smart I^2C interface design	Yes
MTBF	62276 hours
Operating temperature	0 to 40 degree C
Operating humidity	20-95% RH
Efficiency	67 % Typical, at full load
Dimension	42mm(H) x 340mm(D) x 426mm(W)

Table 54 1350W power supply specification

Connector type for ATX2.03, ATX12V(Pentium 4), WTX or AMD-GES are available, but for special only. Contact your sale representative for more information

8. Equipment Log

Use the following worksheet provided below to record information about your system

Item	Manufacturer Name and Model Number	Serial Number	Date Installed
Chassis			
Server Board			
Processor 1			
Processor 2			
Memory 1			
Memory 2			
Memory 3			
Memory 4			
Memory 5			
Memory 6			
Memory 7			
Memory 8			
Memory 9			
Memory 10			
Memory 11			
Memory 12			
Add-in-card 1			
Add-in-card 2			
Add-in-card 3			
Add-in-card 4			
Add-in-card 5			
Add-in-card 6			
Add-in-card 7			
PSU modular 1			
PSU modular 2			
PSU modular 3			
PSU modular 4			
Slim-line HDD 1			
Slim-line HDD 2			
Slim-line HDD 3			
Slim-line FDD			
Slim-CD/DVD			
Slim-line HDD 1			
System Fan 1			
System Fan 2			

Item	Manufacturer Name and Model Number	Serial Number	Date Installed
Hard Disk 1			
Hard Disk 2			
Hard Disk 3			
Hard Disk 4			
Hard Disk 5			
Hard Disk 6			
Hard Disk 7			
Hard Disk 8			
Hard Disk 9			
Hard Disk 10			
Hard Disk 11			
Hard Disk 12			
Hard Disk 13			
Hard Disk 14			
Hard Disk 15			
Hard Disk 16			
Hard Disk 17			
Hard Disk 18			
Hard Disk 19			
Hard Disk 20			
Hard Disk 21			
Hard Disk 22			
Hard Disk 23			
Hard Disk 24			

Table 55 Equipment log

9. Power Budget Calculation

Use these worksheet below to calculate the total power used by your configuration. List all current into the appropriate voltage level for each device and calculate the total current on each voltage level

DO NOT OVERLOAD: Do not exceed power limit for any DC outputs

9. ESR-316 with 650W Power Supply

	Current (Maximum) at voltage level:					
Device	+5Vsb	+3.3V	+5V	+12V	-5V	-12V
System Board						
Processor(s) + Cooler(s)						
Total Memory						
Front Panel LEDs/USB			0.3			
SCSI/SATA/SAS backplanes			3.2			
SAS daughter board(s)						
Slim-line Floppy Disk Drive						
Slim-line CD/DVD-Rom						
Total Hard Disk Drives						
Total Add-in-Cards						
2 x System Fans				4.0		
Optional Rear Fan(s)						
Total Current						
Maximum ratings (650W)	2.5	40	60	40	1	1

Table 56 ESR 316 power budget calculation

From the worksheet above, enter the total current for each colume, multiply the voltage by the total current to get the total wattage for each voltage level. Add all the Wattage up and find the total power usage.

Voltage Level and Current Ohm's Law (Volts x Amperes=Power)	Power (Watts) on each Voltage Level
(+5Vsb) x ( )A	
(+5.3V) x ( )A	
(+ 5 V) x ( )A	
(+ 12V) x ( )A	
(- 5V) x ( )A	
(- 12V) x ( )A	
Total Combined Wattage	

Table 57 ESR-316 total combined wattage calculation

9. ESR-420/ESR 524 with 950W Power Supply

	Current (Maximum) at voltage level:					
Device	+5Vsb	+3.3V	+5V	+12V	-5V	-12V
System Board						
Processor(s) + Cooler(s)						
Total Memory						
Front Panel LEDs/USB			0.3			
SCSI/SATA/SAS backplanes			4.0			
SAS daughter board(s)						
Slim-line Floppy Disk Drive						
Slim-line CD/DVD-Rom						
Total Hard Disk Drives						
Total Add-in-Cards						
2 x System Fans				4.0		
Optional Rear Fan(s)						
Total Current						
Maximum ratings (950W)	3.5	44	56	60	1.2	1.2

Table 58 ESR-420, ESR-524 power budget calculation

From the worksheet above, enter the total current for each colume, multiply the voltage by the total current to get the total wattage for each voltage level. Add all the Wattage up and find the total power usage.

Voltage Level and Current Ohm's Law (Volts x Amperes=Power)	Power (Watts) on each Voltage Level
(+5Vsb) x ( )A	
(+5.3V) x ( )A	
(+ 5 V) x ( )A	
(+ 12V) x ( )A	
(- 5V) x ( )A	
(- 12V) x ( )A	
Total Combined Wattage	

Table 59 ESR-420, ESR-524 total combined wattage calculation

9. ESR-524 with 1350W Power Supply

	Current (Maximum) at voltage level:					
Device	+5Vsb	+3.3V	+5V	+12V	-5V	-12V
System Board						
Processor(s) + Cooler(s)						
Total Memory						
Front Panel LEDs/USB			0.3			
SCSI/SATA/SAS backplanes			4.8			
SAS daughter board(s)						
Slim-line Floppy Disk Drive						
Slim-line CD/DVD-Rom						
Total Hard Disk Drives						
Total Add-in-Cards						
2 x System Fans				4.0		
Optional Rear Fan(s)						
Total Current						
Maximum ratings (1350W)	3.5	67.5	84.5	90	1.2	1.2

Table 60 ESR-420, ESR-524 power budget calculation

From the worksheet above, enter the total current for each colume, multiply the voltage by the total current to get the total wattage for each voltage level. Add all the Wattage up and find the total power usage.

Voltage Level and Current Ohm's Law (Volts x Amperes=Power)	Power (Watts) on each Voltage Level
(+5Vsb) x ( )A	
(+5.3V) x ( )A	
(+ 5 V) x ( )A	
(+ 12V) x ( )A	
(- 5V) x ( )A	
(- 12V) x ( )A	
Total Combined Wattage	

Table 61 ESR-420, ESR-524 total combined wattage calculation

10. BTU usage calculation

Use these worksheet below to calculate the BTU(British Thermal Unit) usage of your ESR system configuration of 50% loading, 75% loading and 100% loading.

9. ESR-316 with 650W Power Supply

Loading	Equation to calculate system power comsumption to BTU	Result
50%	$\frac{BTU}{hr}$ = Total Combine Wattage X 2.34	
75%	$\frac{BTU}{hr}$ = Total Combine Wattage X 3.59	
100%	$\frac{BTU}{hr}$ = Total Combine Wattage X 4.68	

Table 62 BTU usage calculation, ESR-316, 650W

9. ESR-420/ESR 524 with 950W Power Supply

Loading	Equation to calculate system power comsumption to BTU	Result
50%	$\frac{BTU}{hr}$ = Total Combine Wattage X 2.27	
75%	$\frac{BTU}{hr}$ = Total Combine Wattage X 3.40	
100%	$\frac{BTU}{hr}$ = Total Combine Wattage X 4.54	

Table 63 BTU usage calculation, ESR-420, ESR-524, 950W

9. ESR-524 with 1350W Power Supply

Loading	Equation to calculate system power comsumption to BTU	Result
50%	$\frac{BTU}{hr}$ = Total Combine Wattage X 2.27	
75%	$\frac{BTU}{hr}$ = Total Combine Wattage X 3.40	
100%	$\frac{BTU}{hr}$ = Total Combine Wattage X 4.54	

Table 64 BTU usage calculation, ESR-524, 1350W

The system is designed to be serviced by qualified technical personnel.

The desired Mean Time To Repair (MTTR) of the system is 30 minutes including diagnosis of the system problem. To meet this goal, the system enclosure and hardware have been designed to minimize the MTTR. Following table lists are the maximum times that a trained technical personnel should take to perform the maintenance and replace procedure, after diagnosis of the system and having identified the failed component.

Activity	Estimate Time
Remove cover	1 minute
Remove and replace hard disk drive	2 minutes
Remove and replace power supply module	30 seconds
Remove and replace system fan	30 seconds
Remove and replace backplane board	5 minutes
Install slim-line IDE hard disk drive	3 minutes
Install slim-line CD-Rom drive	3 minutes
Install slim-line Floppy Disk Drive	3 minutes

Table 65 Mean Time to Repair

NOTE